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EDITORIAL

LOOKING TO THE FUTURE . . . An issue-by-issue study of the first two volumes of AMERICAN ANTIQUITY cannot fail to bring the comforting conviction that our young society is successfully fulfilling one of its most important functions. Even casual reading impresses one with the high average quality of the contributions; but only careful analysis makes fully clear the remarkable diversity of subject matter, the wide geographical range of the papers, and the wise apportionment of space between the several specialized departments. Such scrutiny brings increased realization of how faithfully, intelligently, and efficiently we have been served by our Editor. And this is particularly fortunate because of this Society's unique dependence upon its journal.

Most organizations representing the smaller disciplines content themselves with publication of a quarterly and the holding of an annual meeting. Its journal, indeed, is in many cases the only real excuse for a group's existence. But we have been more ambitious in electing to take over the many important activities of the Committee on State Archaeological Surveys of the National Research Council. This body, under Dr. Guthe's able chairmanship, exercised very significant influence upon the development of archaeology in the United States by supplying information, by encouragement of isolated students, by breaking down artificial barriers between the states, and, perhaps most useful of all, by promoting a series of regional conferences. Grants from Carnegie Corporation enabled the Committee to perform these services. However, it is the probably wise policy both of the Research Council and of the Corporation not to continue indefinitely to subsidize such projects. Aided through the teething stage, they are supposed, if worth their salt, to be able to elicit support from the disciplines they benefit. Sponsorship for the Committee's work was accordingly made one of the primary objectives of the Society for American Archaeology.

To carry on, of course, requires money. Backing for further conferences should not, however, be difficult to obtain. These gatherings have so brilliantly demonstrated their value that one can appeal with

some confidence to the research councils and foundations. But for more routine, though no less essential requirements: postage, stationery, circulars, clerical assistance, travel for personal interviews—all the thousand-and-one duties which a correlative and informational agency must undertake—for all these things funds are also needed, and even though not large they are, as we all know, extremely hard to get. Apparently they can only be drawn at present from membership dues.

This brings us back to our journal, for solely through it can we increase our membership. AMERICAN ANTIQUITY is the only *quid* we can give for our members' most indispensable financial *quo*. It is our meal-ticket. It must be maintained at its present high level of excellence, and constant thought must be given to the needs and the wants of our non-professional affiliates, who greatly outnumber the professionals, and whose support makes possible the existence of the Society.

Thanks to the devoted efforts of Dr. Guthe and Mr. McKern, we have weathered the difficult early years, and it has been proved that there are enough interested amateurs to permit the inaguration of a first-rate scientific organ. But there is inevitably an annual loss of members, which must be made good by new enlistments; and a very considerable increase in subscriptions will have to be achieved if we are to continue and develop the work of the State Surveys Committee. This should not be left to the unaided efforts of the Secretary-Treasurer and the Editor. To require them to carry the entire load is manifestly unfair to these busy men as well as to the institutions which are already donating to the Society so large a share of their time. It is primarily the duty of the Fellows to lend a hand, for in AMERICAN ANTIQUITY they are provided with an invaluable professional tool; they will profit most by increased popular interest in archaeology; and it is they who will be the principal gainers by discouragement of random digging and more effective protection of ancient remains. But the affiliates (I would much prefer to have them called members) can also be of enormous assistance.

How can we all help? Most obviously, of course, by prompt payment of dues and by securing new members. There is no one of us who could not bring in at least one. Fellows, who often make contact in the field and in museums with potential subscribers could, with a little effort, secure many more. A really active committee on membership would greatly lighten the burden of the Secretary-Treasurer. In view of the very general interest in archaeology, there seems to be no reason why our roster should not quickly be doubled or trebled.

Chickens doubtless ought not to be counted before they are hatched, but it is only common sense to have at least a small brooder ready. So we should be giving forethought to the use of such new funds as might accrue. One naturally thinks of increasing the size of the journal, or of the publication of memoirs; next, of carrying forward this or that worthy part of the State Survey program. But we are a very young society, we hope there lies before us a long and useful career, and we should devote all our immediate resources to the strengthening of our permanent organization by supplying our "working" officers, the Secretary-Treasurer and the Editor, with high-grade, adequately remunerated assistants, who can not only relieve them of all routine but who can carry an increasing share of responsibility. One of the weaknesses all such bodies as ours lies in the difficulty of enlisting their ablest members for the really important executive, editorial, and policy-directing positions. We have been extraordinarily fortunate in having launched our ship with such men as Mr. McKern and Dr. Guthe on the quarterdeck. But even should their institutions allow it, these gentlemen presumably would not feel able to serve indefinitely. However, if they can be given reasonable aid, and if it be made clear that they have not received, so to speak, life-sentences, they can perhaps be persuaded to see us through the period of our adolescence; and with similar assurances we should in future be able to draft for our more important offices the ablest and most energetic of the younger archaeologists.

A. V. KIDDER, *President*

THE FIRST TWO SEASONS AT AWATOVI

J. O. Brew[73]

SINCE THE publication, in 1891, of Mindeleff's maps and descriptions of five ruined pueblos along the rim of Antelope Mesa, the Jeddito Valley in the Hopi Reservation, northeastern Arizona, has been known as an interesting archaeological area. Subsequent short field trips by Fewkes, Russell, Hough, Kidder, the Cosgroves, Gladwin, Morris, and Hargrave have furnished further information about the large sites, called attention to the great number of small sites, and emphasized the archaeological importance of the region as a melting pot in which were blended elements of cultures and probably peoples from many directions. San Juan, Little Colorado, and Puerco met here; the San Francisco Mountains are within sight to the west, and a Rio Grande tongue is still to be heard on the Hopi mesas.

A realization of the amount and the variety of the material awaiting more intensive investigation there induced the Peabody Museum of Harvard University in 1935, to send a reconnaissance expedition to the Jeddito Valley. This is a preliminary report of that reconnaissance and of the first season of excavation which followed it.

RECONNAISSANCE, 1936

After a preliminary study of pottery and other artifacts from Jeddito and surrounding areas in the Peabody Museum, Cambridge; the Phillips Academy Museum, Andover, Massachusetts; the Museum of the University of Colorado, Boulder; the Laboratory of Anthropology, Santa Fe, New Mexico; and the Museum of Northern Arizona, Flagstaff, field work began September 24, 1935.

The first season's work divided readily into: (1) reconnaissance mapping; (2) investigation, with some testing, of large sites; (3) investigation, with some excavation, of small, early sites.

The staff consisted of the author, leader of the expedition; Mr. Alden B. Stevens, technical assistant; Mr. J. A. Lancaster, foreman; and Mr. Lyndon Thompson, cook. Eight Hopi Indians comprised the crew.

Reconnaissance Mapping. Beginning to the east of the easternmost known large site in the Jeddito Valley, a map was made with twenty-meter contours, showing the north side of the valley and adjacent parts of Antelope Mesa for fourteen miles down to and including the point which forms the western end of the mesa. Sixty-one sites were

[73] Peabody Museum, Cambridge, Massachusetts.

located on this map, including the large ruined towns of Awatovi, Kawaiokuh, Chakpahu, Ne Suftanga, Kokopnyama, and Lululongturqui. During the progress of mapping, sample collections of potsherds were obtained from each site and general descriptive notes taken.

Chronologically, the sites embrace the entire range known for so-called "open sites" in this part of the Southwest, beginning with Modified Basket Maker (BM III) and extending to 1700 A.D. There also exist in the region mapped ruins of Navajo houses (hogans) and of modern Hopi farm houses. These are not on the map, but will be included eventually in the complete regional map, along with occupied hogans and the houses of the present day Hopi farmers.

It is intended, as work in the Jeddito region continues, to expand and add to the map from year to year until the whole of the Jeddito drainage is included.

The Large Sites. Scattered along the south rim of Antelope Mesa are the ruins of four large pueblos: Awatovi, Kawaiokuh, Chakpahu, and Kokopnyama. Two others, Ne Suftanga, on the north side of Jeddito wash, and Lululongturqui, on the south side, although smaller than the four mentioned above, are still of sufficient size to merit attention and designation as larger sites.

After an examination of each, Awatovi was selected for more extensive testing. This is the westernmost of the large sites, close to the end of the mesa, slightly over eight miles by road from Keams Canyon. The ruin extends for one-quarter mile along the south rim of Antelope Mesa and back over the mesa top for 250 to 300 yards (Plate III, Figure 1). Close by are one small and two large springs of excellent water.

Awatovi was still inhabited at the time of the Spanish conquest. Situated on the old trail from the cities of Cibola to the Hopi towns, its springs made it a most important station on the march from Zuñi. Presumably the first of the Tusayan towns encountered by Tobar in 1540, it was visited in 1583 by Espejo and in 1598 by Oñate. In 1629, the establishment of the Franciscan Mission of "San Bernardino de Awatobi" was authorized, and from that time until the Pueblo Rebellion in 1680 the inhabitants seem to have been in close contact with the Spaniards.

After the Pueblo Rebellion twelve years elapse before mention of Awatovi is found again in the Spanish records. In 1692 the "Moqui" pueblos, including Awatovi, were visited by de Vargas with a military expedition, and once more fell under the influence of Christianity and

European civilization. The reacceptance of Spanish suzerainty and religion seems to have been more complete at Awatovi than in the other Hopi villages to the west. This may have contributed to the eventual downfall of the town. The story of the destruction and abandonment of Awatovi is not very clear. According to legend, sometime during the winter of 1700–1701, bands of men, probably recruited from the Hopi towns of First and Second Mesas, attacked the village and massacred the male inhabitants. As far as our information now goes, this marked the end of Awatovi as an inhabited site.

Thus for the final one hundred and sixty years of its life, a documentary record, however meagre, exists. The historic town is easily identified. Wheat-straw and peach stones are visible in the adobe of walls at the southeast corner of the site, the only walls still standing above the surface of the ground, and apparently part of the Franciscan quadrangle. The ecclesiastical unit borders on the north a large plaza, the other three sides of which are made up by the houses of the pueblo. It was in this plaza that Dr. J. Walter Fewkes sought the kiva where, in Hopi story, the men of the pueblo were burned to death on the night of its destruction. In the refuse mounds to the north and east, behind the houses of the plaza, objects of European origin, including iron nails and fragments of china, are to be found.

The earliest section of the site seemed, in the preliminary survey, to be located at the western end where potsherds on the surface indicated that the largest mound covered the ruins of a good sized Classic Pueblo structure. Yellow pottery, so common in other parts of the site, was largely absent here and its place was taken by a number of earlier wares, predominantly Tusayan black-on-white and Jeddito black-on-orange.

Between the two sections was a large area of seemingly continuous occupation. The only information of chronological value available was the result of a single stratigraphic test made by Dr. A. V. Kidder, showing Sikyatki material only. Indications of a number of plazas were to be seen on the surface and mounds of building debris rose in places as high as fifteen feet above bed rock. Since some information was on hand about the eastern and western sections of the site, it was decided to devote the preliminary investigations to the relatively unknown area in between.

A test trench 2 meters (2.2 yards) wide and 233 meters (255 yards) long was dug across the short distance of the site near the center. Excavation revealed structures extending continuously for almost the

FIG. 1—Awatovi, looking west. The standing walls are the remains of the Franciscan mission of San Bernardino de Awatobi.

FIG. 2—Kiva A, 1936 trench, showing: sheep bones; jar serving as sipapu; sipapu stone; loom weight; coal fire pit; wood fire pit; short poles roofing horizontal part of ventilator shaft.

FIG. 1—Western Mound, looking east up Antelope Mesa.
FIG. 2—Western Mound with top rooms cleared.

entire length. The extreme north end of the trench runs through a trash mound of pure Sikyatki period, built up from the bed rock. Except for this, rooms or kivas were found throughout, numbering 106 rooms and 5 kivas.

Rooms in the trench were almost all filled with refuse, and there was more than one instance of a house being built over the ruins of another after the irregularities in the early ruin had been smoothed out by means of the accumulated trash. This was particularly true during the Mission period. The last (Sikyatki) prehistoric buildings were covered by fill well loaded with artifacts, of Mission type. In two places on top of this were the walls of late 17th century rooms representing a backward movement from the town which had been located for some time to the east, close by the buildings of the Mission establishment.

Buried rooms were found to be in an excellent state of preservation. The plaster, in many layers, remains intact upon walls of well-cut stones, holding forth promise of wall paintings such as that found by Hough at Kawaiokuh.[74] Doorways, both open and sealed, were encountered, and one room, though definitely not a kiva, possessed a well defined bench at the south end. Flagstone floors were common in the rooms, as well as in the kivas. On the whole, the construction is quite impressive; only the poor quality of the stone (Mesa Verde sandstone), which disintegrates quickly when exposed to the elements, has prevented the survival of structures above ground, such as are encountered in other parts of the Southwest.

In addition to ordinary living and storage rooms, five rectangular kivas were found. Four of these were in open plazas; the fifth, incorporated in a large building. The first kiva found was the most elaborate (Plate III, Figure 2). It had a floor of very large, thin slabs, set upon a bed of clear sand on a smooth surface of hard-packed adobe mud. Around the four walls ran a bench, expanded to the size of an ample room at the south end. The bench was also slab-lined, and the wall behind it was hung with matting. Sunk into the floor were two firepits, the one containing coal ash, the other, wood ash, and a sipapu consisting of a large, undecorated cooking pot. A very large, heavy, circular stone, resembling a millstone, with a hole in the center, rested on the floor near the latter, and is said to have been placed over the sipapu in certain ceremonies. Two loom-wieghts, very carefully made with recessed hand-grips, were found on the floor also. Many of the floor and wall slabs were ornamented with hemispherical pits slightly under an

[74] Illustrated in Plate 89, Report of Smithsonian Institution for 1901.

inch in diameter, arranged in patterns. Each of the largest slabs also had one hole piercing it.

On a slab near the center of the floor were the remains of two domestic sheep, the complete skeleton of one and the skull of another. From this evidence it is clear that Kiva A belongs in the Mission period and, it may be added, of the kivas uncovered it most closely resembles the Hopi kiva of today.

Nearby were three other kivas, two of which were definitely older than the one described above. One of these had two layers of houses built over it and another contained within itself, with the new floor at the old bench level, a smaller and later kiva. Like the first, all were slab-lined, but had benches only at one side, not on all four.

The fifth kiva was found in a Sikyatki house block. Much smaller than the others in size, it is no bigger than an ordinary room. A very narrow bench extends along one side only. The fireplace is in the southwest corner and the ventilator shaft is a flue incorporated like a modern chimney in the south wall.

With the exception of the latter, these kivas are isolated from the residential house-blocks, and were entirely subterranean. The inner walls are beautifully finished, but the outer walls are untrimmed and extremely irregular, indicating that they were completely subterranean and never exposed to view.

A considerable number of artifacts were encountered during the digging. Restorable pots and bowls were found on the floors of rooms and kivas, and large storage jars, buried beneath the floors with the mouth at floor level, were not uncommon. Plate III, Figure 2, shows a jar in place as the sipapu in Kiva A. Bone and stone tools occurred in profusion, and a number of ornaments, mostly beads, of pottery, bone, stone, and shell were found. Chief among the latter are imitations of shells in pottery, attractively painted and pierced for use as beads, pendants or earrings.

Surprisingly frequent occurrence of realistic life forms was noted in the pottery, both in painted designs and in the round. Equally gratifying was the discovery of katchina masks and apparent representations of dances on the painted pottery, promising the possibility of tracing some of the modern Hopi ceremonials into the archaeological past.

As far as can be inferred from the preliminary studies made of materials, the greater part of the buildings uncovered in this trench belong to the late prehistoric periods and were occupied during the 15th and 16th centuries. Timbers from Sikyatki levels have been

dated by Dr. Haury from ±1504 to ±1550. One kiva and certain rooms bear unmistakeable evidence of occupation after the coming of the Spaniards, while bones of domestic sheep in the fill under walls show that some of the latter were not only used but also built during historic times.

The Small Sites. Fifty-five small sites are located on the regional map. Although a few are as late as the Mission period, for the most part they belong to Classic Pueblo and earlier. The most promising of the latter sites was excavated. Site 4 is on the top of the mesa, on a little protruding point near Jeddito Trading Post.

The nature of the surface indicated the presence of both slab-walled structures and houses with walls of coursed stone masonry. The potsherds ranged from Modified Basket Maker (BM III) to and including Classic Pueblo (P III). Although a small site, the possibility of interesting and instructive stratigraphy seemed promising.
Excavation revealed:

1. An isolated Modified Basket Maker slab-walled room with an adobe firepit in the center.
2. A badly ruined Modified Basket Maker pit house with a Pueblo kiva superposed.
3. A unit of the Developmental Pueblo period preceding Classic Pueblo. A small structure of three rooms, one paved with flagstones, and the single kiva mentioned in Item 2. The house walls are unusual in that the foundation consists of a double row of stones set on edge. These are not thin slabs, but stones of similar size and shape to those ordinarily used in coursed masonry. The kiva walls were badly ruined except on the north and south sides where they were intact.
4. An early Classic Pueblo unit, of three rooms and kiva. The kiva was found in an excellent state of preservation. On the floor in front of the ventilator opening was a small slab which apparently was used for regulating the draft. The firepit was filled with coal ash and is believed to be the earliest recorded use of coal in the Hopi country.
5. A Classic Pueblo structure of at least seven additional rooms, probably built as an expansion of the smaller unit described above. This is substantiated by the apparent absence of a new kiva. In the rooms are storage bins, grinding bins, and fireplaces. The pottery is a well developed black-on-white, associated with

numerous sherds of Classic Pueblo Polychrome types, but the Jeddito wares are entirely lacking.

6. This one small site presents architectural and pottery sequences beginning with Modified Basket Maker (BM III) and extending well into the Classic Pueblo period (P III).

Conclusion. In summary, the Peabody Museum Expedition of 1935 surveyed a section of the Jeddito drainage in northeastern Arizona. The work consisted of a regional map showing the location of sixty-one sites, of which archaeological records have been taken; a test trench across the large site of Awatovi, as the result of which it was recommended that major excavations be undertaken at that site; and finally the excavation of a small site, in which are presented in stratigraphic relationship the early prehistoric periods not as yet known to exist at Awatovi.

Because of the location of Awatovi above springs, however, and because of the prevalence of small Early Pueblo and Modified Basket Maker sites along the rim in the vicinity, it is expected that habitations of these earlier periods will eventually be found somewhere under the many acres covered by the later site.

Thus the 1935 reconnaissance clearly demonstrated that a program of intensive excavation in the Jeddito Valley should present a relatively full picture of the development of Pueblo agricultural civilization from some point in Basket Maker times to the present.

SEASON OF 1936

On August 3, 1936, the first major season of excavation at Awatovi began, continuing almost four months until November 26. The staff consisted of the author, Mr. and Mrs. C. B. Cosgrove, J. A. Lancaster, Homer N. Phillips, Richard P. Wheeler, Watson Smith, Lyndon Thompson, and others who volunteered their services for short periods. The crew consisted entirely of Hopi Indians, sixteen being the largest number employed at once, although during the course of the season twenty-seven Hopis received employment at one time or another.

Careful consideration of the results of the 1935 reconnaissance led to a decision to dig in the western area where surface conditions indicated the presence of the earliest building on the site. Although rather scanty, certain information exists for the historic period and some important dates are known. The nature of the Sikyatki period was partially revealed by the 1935 tests. Consequently, it appeared wise to concentrate the activities of the second season upon the unknown and

seemingly earliest important period. By so doing, it was believed that the entire problem could be more clearly marked out and a better program arranged for the completion of excavations.

The excavations of the 1936 season may be divided into two parts: (1) the excavation of the "Western Mound," (2) testing elsewhere on the site. Although the main excavation and the tests are closely knit together, the success of the latter depending in large measure upon the stratigraphic discoveries in the former, for the sake of convenience they will be described separately in this report.

The Western Mound. Near the cliff edge at the southwestern corner of the site is a mound rising twenty-five feet above the bed rock of the mesa top. As noted above, surface conditions indicated that in this mound was to be found the oldest large structure on the site. A difference in construction was observable where the tops of walls were visible on the ground surface, wide double walls showing instead of the single coursing of Sikyatki and Mission buildings. The most striking difference, however, was in the pottery, for, instead of brilliant Sikyatki and Mission polychromes, a great majority of the potsherds were black-on-orange and black-on-white, bearing geometric designs characteristic of the latter part of the Classic Pueblo period (P III). The character of the designs on these white and orange wares, suggesting, as they do, relationship with the Kayenta division of the San Juan area on the one hand and with Little Colorado wares on the other, constitute one of the most promising features of investigation in the Jeddito region.

Even before excavation the Western Mound was presumed to be entirely artificial. Whether it contained a single large building or a series of superimposed smaller ones was unknown. Excavation began at the western cliff edge with the intention of exposing the surface layer of rooms in a strip two to four rooms wide running up over the crest of the mound. With so many rooms laid bare it was thought the nature of the structure would be more apparent and that plans for attacking the core of the mound could better be made at that time, with the possession of the additional information which clearing of the upper rooms would provide. With very few exceptions walls extend to the present ground surface all over the site, and may often be traced without excavation. The procedure followed at the beginning of excavation was simply that of clearing each room down to the first floor remaining intact. The depth of such floors varied from a few inches below the surface to as much as twelve feet.

Thus ninety rooms were cleared in a strip passing directly over the top of the mound in an east-west direction (Plate IV, Figures 1–2). They were filled mainly with building debris and refuse, the latter containing a high proportion of coal ash and clinkers. As in the structures explored in 1935, many of the rooms were equipped with two firepits, containing wood and coal ash, respectively. Outcrops of coal are observable at many points along the mesa-side, and a mine is at present operating within ten miles of Awatovi. Certain it is, as our evidence shows, that the peoples of the Jeddito Valley were burning coal in prehistoric times, and not only during the Sikyatki period, but well back into Pueblo III.

The first thirteen rooms cleared belonged apparently to a single building. The wall type, a wide double wall of well-laid stone, was uniform throughout and the debris in the rooms belonged to the period known as the Jeddito Black-on-Orange, from a striking pottery type appearing at this time. As excavation continued up the slope of the mound, buildings superimposed upon the earlier structure were found. The new rooms were characterized by changes in wall construction and in the nature of the pottery. The thick double wall is superseded by a single wall of relative thinness, and flagstone floors occur. The designs on the pottery remain the same in the rooms directly above the black-on-orange type but the color changes from orange to yellow. Although the designs still bear close relation to those of the preceding periods, this change in color seems to mark the first appearance of the beautiful yellow ware which in its full development is known as Jeddito black-on-yellow. Very shortly afterwards, as the top of the mound was approached, rooms containing this fully developed yellow ware were found, as well as pieces of Sikyatki Polychrome ware, considered to represent the highest prehistoric stylistic development of the potter's art in this region.

Thus, at mid-season, the position was as follows: in the Western Mound at least three periods, Jeddito black-on-orange, an early yellow ware period, and Sikyatki, are represented in stratigraphic relationship, and in such quantity that structural, ceramic, and artistic development can be readily traced (Plate V, Figure 1). Two major questions remained to be settled: (1) the age of the mound, particularly whether or not it was occupied before the black-on-orange period; (2) the structure of the mound—although walls twelve feet high were uncovered, the nature of the inner part of the mound was still unknown. The answers were to be found only in the center of the mound.

FIG. 1—Western Mound, north-south cut, showing black-on-orange and black-on-white rooms at the base of the mound.
FIG. 2—Room in the Mission Town, Awatovi, showing mealing bins, and metates piled in the corner.

UNIV. OF MICH.

It was decided to attack the center from the short, south side, making a cut in the south-central section of the top sufficiently large to permit an excavation at least two rooms wide at the base. This was successful and a double row of rooms was excavated extending from the center of the mound to the southern cliff edge, cleared to bed-rock level. When base of mound was reached it was found that the lowest part of the central rooms contained no Jeddito black-on-orange pottery, only black-on-white and polychrome wares belonging to the Classic Pueblo period.

In answer to the second question, walls were discovered running from the mesa cap-rock to the top of the mound. Thus, in the center of the mound is a structure with walls twenty-five feet high. Part of this maximum height seems to have been attained during the black-on-orange periods. Some of the high walls, however, though continuous, show that they were not built at one time. Rather, they represent upward extension of old walls as need for expansion or the filling up of old rooms underneath dictated. Definite changes in masonry types, as well as occasional jogs and overlaps, bear evidence of this. Sections resembling the walls of late Sikyatki period buildings in the 1935 test trench are to be found as upward extensions of masonry of a very different character. The appearance of two rows of rooms at the top of the mound suggests contemporaneity with the rooms below. The other upper rows can be shown to be later, even in those cases where the upper walls are extensions of the ones beneath. Many of the upper rooms do not demonstrate this rigid adherence to previous ground plan and break away from it entirely. The normal stratigraphy presented in the latter cases assists in untangling the problem of vertical wall extensions over long periods of time.

The situation discovered in the Western Mound is as follows. The beginnings of the first large structure lie in the period known as Pueblo III and before the introduction of Jeddito black-on-orange pottery, to which a date of 1300 has been assigned by Hargrave. Only in the center of the mound are rooms found without black-on-orange ware. By the time expansion had carried the building on the south and the west to the cliff edge, the orange ware is found at the very bottom. This was the great period of the Western Mound. Rooms of this period extend along the western and southern edges of the cliff and almost as far east, as shown in tests to be described later, as the 1936 trench. Above, with the rooms in the center and on the edge of the mound destroyed and filled in, are the remains of a short period when yellow pottery had

superseded the orange but with little change in the nature of the designs. Above this are found the Jeddito yellow wares and remains of the Sikyatki period, the last prehistoric era. By this time most of the population of the town was located to the north and east of the Western Mound.

Of great value in reaching these conclusions was the vast number of pieces of broken pottery found in the refuse filling the rooms. These sherds were placed in boxes by the diggers and taken to the pottery tent in camp where they were washed, classified, tabulated, and sorted for restorable pieces and desirable design fragments.

Near the edge of the mound, where the depth was not great, a few rooms contained sherds of only one period. A room abandoned or ruined in an occupied area, if not re-occupied or repaired immediately, was probably filled rapidly, particularly when it was below the general level of occupation at the time. Desire to utilize the space, shown by new buildings, floors at higher levels, and plaza surfaces with buildings beneath, particularly in closely-knit pueblos like Awatovi, must have hastened such filling until the rate of accumulation greatly surpassed that of ordinary refuse mounds. Confining the dump within four walls would also add to the speed of accumulation.

As soon as the rooms near the rim were left behind, however, definite pottery variations began to appear. From then on, all digging was done at fifty-centimeter (19.7 inches) levels, except where floors or other features provided more significant divisions. Whenever possible natural stratigraphy is preferable to arbitrary metrical divisions, but in excavating these rooms it was feared that reliance on discoverable significant natural strata, often feasible in large refuse mounds, would not be sufficient for the purpose. Furthermore, many of the factors which endanger the accuracy of arbitrary stratigraphy in large refuse mounds do not operate with the same intensity here. As has been suggested above, refuse seems to accumulate faster and more uniformly in an enclosed area and, again, the rooms are so small that dips in the strata of deposited refuse seldom exceeded a few inches. In those cases where the variation from the horizontal was great, it was taken into consideration. By mid-season 80,000 potsherds had been tabulated, and at times during the third month more than 5000 a day went over the classifying tables. All potsherds in all rooms were tabulated and recorded, and vertical records by fifty-centimeter (19.7 inches) blocks are available for every room from bed rock to the top

of the mound. In all, 440 levels from 131 rooms were recorded with a maximum of fifteen levels in one room.

Because of the tremendous numbers of sherds, field classification was restricted to major types. In this way it was available for immediate use and its value could be readily assessed. Charts made in camp from the figures of the sherd count were compared with the excavation maps and with the site itself. Variations in pottery type expressed in percentages at different levels and in different rooms, when checked against each other and with other factors such as architectural stratigraphy, wall type, and floor type, were found to be reliable. Most of the major structural changes observed during excavation were indicated in the sherd percentage, and new leads provided, many of which proved significant.

Demonstration of the reliability of the potsherd count was most encouraging, particularly with regard to one of the very disconcerning characteristics of pueblo towns in this region. The situation is well illustrated by the following observation made in 1936 at Shipaulovi, a modern Hopi town on Second Mesa, eleven miles west of Awatovi. On the south side of the plaza a new building is being constructed. Of but a single story, it is at plaza level, with a two-story house abutting it on the west and a three-story house on the east. The two-story house is reputed to be thirty or forty years old, and the three-story one, "about one hundred." One of the rooms on the third story of the latter is ruined. It has lost a wall and the roof timbers are hanging down into the room, all this a good ten or twelve feet above the men building the new house. Now add the probability that some of the interior rooms at the present ground level in the old house are disused and even filled up, and a stratigraphic problem appears which might almost be called four-dimensional.

Observations in other modern Hopi towns, especially Walpi, and numerous situations appearing during the course of excavations in Awatovi's Western Mound, lead one to infer that this sort of thing is more usual than not in the great Pueblo blocks. It is customary to refer to these architectural masses in a loose fashion as prehistoric apartment houses. This carries an implicit misconception, that each mass is a single building, in the modern sense of timbers, beams, and girders tying it together like the parts of an engine. Rather it is an accretive architectural aggregate with no stronger binder between many of its respective units than the local adobe mud which fills the

crack along the lines of abutment. Furthermore, the coarse-grained Mesa Verde sandstone of the region is extremely crumbly, and replacements seem to go on continually.

The apartment-house concept also implies that all of the rooms are in use, whereas actually one may sit with a Hopi family in one room while the room on the other side of the wall has been filled with trash and sealed for years. The usefulness of the figures from the sherd count in attempts to untangle such situations lies in the ability to state the probable time of abandonment of a room or any given level in a room by the type of pottery with which it is filled. Further important use of sherd count data will be shown later with the description of the test digging.

As may be expected when tabulating thousands of potsherds from the ruin of a large and active town, many representatives of the wares of neighbouring regions and occasional pieces from greater distances were encountered. New types or, at least, new variations of old types were found as well. The most important result of the pottery study to date is the influx of "Little Colorado" polychromes at the bottom of the Western Mound, immediately before the appearance of the well known Jeddito black-on-orange. The coincidence of the appearance of large numbers of potsherds showing affinity with the Little Colorado area and the beginning of massive house block construction at Awatovi adds great promise to the solution of one group of our major problems: the cause of the concentration of population evinced by the large pueblos along the Jeddito rim, and the source of this population.

Other artifacts studied in the field included implements and ornaments of chipped, pecked, and ground stone, bone, antler, clay, and shell. Each object was recorded in the field with measurements and sketch, and classified on specially designed cards. Two thousand one hundred fifty such objects were handled during the 1936 season. They were found in profusion in the refuse and *in situ* on the floors of the rooms and kivas.

The kivas excavated this season proved most satisfactory indeed. While working at Kawaiokuh, three miles east of Awatovi, in 1901, Dr. Walter Hough uncovered a painted wall showing part of a human figure and a bird in yellow, green, and white. Because of this find nearby, it was hoped that decorated walls would be found during the work at Awatovi.

Early in the second month of the season, pieces of painted wall

plaster were discovered in the fill of a room near the summit of the Western Mound. The size of the chamber, as shown by the wall outline, had already led to the inference that it was a kiva. Examination of the east wall revealed the presence of a painted design beneath three or four layers of ordinary brown adobe coating with which most of the interior walls of the site are plastered. Furthermore, examination of fragments from the upper part of the wall which had fallen into the room showed many other painted layers behind the one visible on the surface. This could also be observed in cross section in the plaster on the wall at the level where the upper part had broken away. In all twenty-three paintings were found on this wall.

Adjoining this on the east is another kiva where nine paintings were found on the north wall. Eight more were found on the east wall of the kiva in Test 14, and a single bird was discovered painted on the wall of what appeared to be, otherwise, an ordinary room. The total number of murals uncovered was forty-one, all but one in kivas.

Surprising variations were found in both subject and technique, ranging from pure geometric design, through formalized bird and animal representations often resembling elements on Sikyatki pottery, to apparent crude attempts at realism. A careful study of these, particularly in relation to the highly evolved prehistoric pottery painting, should add much to our knowledge of the history of Pueblo art. The probability of procuring sequential dating of the rooms on the walls of which the murals appear, and their stratigraphic arrangement on these walls, encourage this belief.

Other very important information may be obtained from these prehistoric pictures. Attempts to deduce facts pertaining to the religion or social organization of prehistoric people from archaeological remains must always be made with extreme caution, yet two intriguing possibilities are suggested by the Awatovi murals. First, it seems probable that some of the figures represented can be identified with modern ceremony and story. Second, since the paintings occur on kiva walls, it may even be possible to obtain from them information as to the societies by whom these kivas were used.

The fragmentary condition of the walls and the sandy, crumbly nature of the adobe have prevented the preservation of complete pictures. Other painted walls have been located, however, and many more paintings should be recovered before the completion of the project.

Each picture was carefully photographed and a scale drawing made. The color was then recorded as closely as possible by compari-

son with a color dictionary. Black, white, reds, and yellows are most common, but shades of pink, orange, green, and blue also occur. The brown of the adobe plaster background is often used effectively in the design.

Plant Analysis. The expedition has been very fortunate in securing the cooperation of Mr. Volney Jones and the University of Michigan in the inauguration of the first of many agricultural studies which must be made.

During the month of September, Mr. Jones was at Awatovi studying the plants of the Mission period as preserved in adobe bricks. The bricks were carefully dissolved and screened, after which the vegetal content was taken to Ann Arbor, Michigan, for study.

The binder in the bricks is largely wheat straw but many other seeds and stalks are included. Fifty-one bricks were collected and the analysis of them is now being made. Further work of this nature is intended if more adobe bricks come to light during the excavation of the mission.

Test Digging. An extensive program of testing was undertaken during the 1936 season. Certain tests were made in and around the mission town; the buildings along the northern edge of the site were examined; and numerous tests were made around the Western Mound in order to determine the extent of the buildings in the black-on-orange period. Demonstration of the reliability of the potsherd count in the main excavation has aided materially in the testing, and it is expected will assist to an even greater extent in future relating of the many buildings on the site.

In all, nineteen tests were made, of from one to ten rooms in extent and down to fifteen feet in depth (Plate V, Figure 2). The main facts ascertained are:

1. The eastern dump seems to be a purely 17th century deposit.
2. Early as well as late Sikyatki rooms underlie the mission buildings.
3. At least part of the town during mission times was burnt, and pottery and other objects remain *in situ* in the rooms beneath the fallen roofs.
4. The houses along the north border of the site west of the mission town belong to the last prehistoric period and correspond in their great length, in wall type, and in contents to the rooms of the large building in the northern half of the 1935 trench.
5. North of the central portion of the Western Mound and under Sikyatki buildings is a refuse mound of the black-on-orange and

earliest black-on-yellow periods. In it a burial was found accompanied by eighteen pieces of pottery.

6. During the black-on-orange period, when the town began to assume true pueblo proportions, it extended along the cliff roughly 100 yards in a northwesterly direction and 150 yards to east. Whether or not a plaza existed in the angle between these two rows has not yet been determined.
7. Test 10, in one of the westernmost parts of the sites, strongly suggests Mission occupancy.

Whenever possible, complete rooms have been cleared in the testing, usually more than one. The tests are always continued to bed rock. When adequately defined, significant strata breaks are followed, otherwise all test digging is done in arbitrary fifty-centimeter levels. Such testing will be continued through subsequent seasons, and it is expected that a well planned program of tests will eliminate the necessity of extensive excavation in many parts of the site.

Conclusion. The 1936 Awatovi Expedition satisfactorily attained its season's objective of outlining the history of the Western Mound. The first large house was begun during Classic Pueblo times and before the characteristic black-on-orange ware of the region appeared. From this point development in architecture, pottery, implements, ornaments, and art is depicted in gradual stages until on top of the mound are found remains of residences of the last prehistoric period. To find so many stages so well shown in a single vertical picture was gratifying in the extreme. In all, 131 rooms, 3 kivas, and 18 tests, involving from one to ten rooms each, were dug.

Plans for the next season call for intensive investigation of the mission quadrangle and the town during the historic period, for detailed work in the great Sikyatki houses in the middle part of the site, and a small number of additional tests in the western area. It is hoped also to continue the regional survey begun in 1935 until all of the hundreds of habitation sites are mapped. Further excavation of small sites will be undertaken, and prehistoric farm lands and water supply investigated. Sources of building materials, pottery clay, paints, stone, and minerals for implement and ornament need to be located, and the coal outcrops scattered along the mesa under the rim must be examined further, together with the whole problem of sources and handling of fuel and methods of firing pottery.

Such a study will present a picture of human occupation and cultural development in the Jeddito region from Basket Maker times to the present, and will add much to our knowledge of the history and movements of the Pueblo peoples.

A SYMPOSIUM ON CERTAIN PROBLEMS IN CULTURE ORIGIN

EDITORIAL PREFACE

The following three papers were independently prepared without so much as a comparison of notes, and are grouped here solely because of related subject matter. The articles by Fewkes and McKern were actually submitted before either author was aware of the other's interest in this subject. Subsequently it became known that Gladwin was preparing an article of parallel import but relating to a Southwestern manifestation, and he was asked to make some contribution to the subject in this issue. Each of the three authors reserves the right to agree or disagree wholly or in part with the position taken by the other two.

AN HYPOTHESIS FOR THE ASIATIC ORIGIN OF THE WOODLAND CULTURE PATTERN[75]

W. C. McKern[76]

Archaeological research in the Mississippi Valley during the past decade, although a map illustrating the areas intensively worked would have an exceedingly spotted appearance, and programs of study have been hardly more than superficial anywhere, has resulted in more clearly defining many of the problems for that field, and in marked progress toward the solution of a few of the more simple problems. Perhaps the most important advances made are in relation to such final preliterate manifestations as are classified under the Upper Mississippi Phase. Certainly, relatively small headway has been made in the general field of the Woodland Pattern.

Nevertheless, to the student who has engaged in intensive research relating to both Woodland and Mississippi manifestations, the complex of determinants for the Woodland Pattern is assuming clearer definition, and criteria for the essential separation of Woodland and Mississippi patterns in any classification have become more and more sharply apparent. In fact, so abrupt is the contrast between these geographically overlapping patterns, where diffusion from readily apparent contemporaneous occurrence has not dulled the lines of differ-

[75] Read before the joint meeting of the American Anthropological Association, Central Section, and the Society for American Archaeology, Iowa City, April 16–17, 1937.

[76] Curator of Anthropology, Milwaukee Public Museum.

entiation, that the student is confronted with the probability of remotely separate origins for the two manifestations.

No hypothesis for the origin of either culture division has been definitely presented. However, culture origin is unmistakably implied in the well-known hypothesis for a single central origin of all aboriginal American pottery, excepting the Eskimo product.[77] This hypothesis is rather generally accepted, although Wissler has proposed a possibly separate, Asiatic origin for a ware illustrated by Mandan-Hidatsa pottery.[78] Any hypothesis for the common origin of either Woodland and Mississippi pottery wares or cultures would place the two manifestations in definite relationship and would lead one to expect a readily apparent typological similarity, at least in certain essentials of basic significance.

Assuming that the Mississippi Pattern may have developed its fundamentals at some locality geographically remote from the seat, or temporally remote from the time of Woodland development, and that distant relationship and a relatively late contact between the two cultures might account for this marked dissimilarity, one would still expect to find, as a result of comparing each pattern with the other, and with the rest of American culture divisions, both important evidence of the distant relationship and some evidence of more direct culture progenitors for the Woodland pattern. I have failed to find such evidence. As new data accumulate, the position for separate origins for the Woodland and any other culture pattern as yet described for the continent, appears more and more probable.

In considering the possible origin of the Woodland Pattern, a number of significant factors present themselves, relating to cultural age, variety and distribution.

The Woodland Pattern in its earlier forms appears to be relatively old in the western subdivision of the area of its important occurrence. Not only is it older here than such manifestations as the Upper, Middle and Plains Mississippi phases, but it appears to antedate all other pottery-making cultures, with the possible exception, in certain restricted locales, of the Elemental Aspect of the Hopewellian Phase. In fact, excepting certain reported manifestations of Early Man in Minnesota and Nebraska, available evidence indicates that it is as old or older for this area than any other manifestation of human culture. Stratigraphic data in support of this assumption have been reported

[77] Wissler, Clark, The American Indian. p. 68, Oxford University Press, 1922.

[78] Wissler, *ibid.*, pp. 69–70.

from Illinois,[79] Wisconsin,[80] Iowa,[81] and Nebraska,[82] and data indicative of a similar relative antiquity for Woodland have been reported for Minnesota.[83] A comparable time sequence is not apparent for eastern Woodland manifestations. The earliest definite occupation of New York, for example, was by a people represented by such pre-ceramic cultures as the Archaic Pattern. Woodland culture seems to have arrived there later. Apparently there is even some doubt as to its being the first pottery-bearing manifestation in the northeastern region.

Furthermore, in the west the traits for Woodland manifestations show greater richness in variety than in the east. This culture variety does not appear to be in any way the result of foreign influences, but rather suggests a development in details well within the general trait limitations. This is particularly apparent in the pottery; the extraordinary variety in detail exhibited in the Woodland ceramics of Wisconsin and Minnesota, particularly in northern Minnesota, offers marked contrast to the relative simplicity in variety for the Woodland ware reported from any section of the Northeastern area. This relative complexity in detail for the western division of Woodland is also apparent in burial customs, variety of mounds, and in other cultural subjects. This condition implies a long period of local entrenchment and development, and might be interpreted to indicate Woodland centralization in this area.

Again, evidence of intensive occupation points to the western division of the area as a center of Woodland development and distribution. In Wisconsin and Minnesota, for a time period preceding the intrusive presence of such late arrivals as the several Mississippi Pattern representatives encountered there, Woodland variants are almost universally dominant (again allowing for important Hopewellian manifestations in restricted areas, and generally of unknown relative age), and entirely isolated from foreign cultural influence over a wide territory. Similar conditions probably prevail, although to somewhat less

[79] Cole, Fay-Cooper and Deuel, Thorne, Rediscovering Illinois. pp. 139, 204–206, University of Chicago Press, 1937.

[80] McKern, W. C., unpublished field notes.

[81] Keyes, Charles R., Antiquities of the Upper Iowa. The Palimpsest 15, No. 10, pp. 347–348, Oct., 1934; personal report, 1937.

[82] Bell, Earl, unpublished field notes.
Hill, A. T., unpublished field notes.

[83] Unfortunately, most of the stratigraphic data in support of these general statements are from personal observations or contained only in unpublished field notes. Moreover, their value is indicative rather than demonstrative.

extent, in upper Michigan, northern Illinois and a large part of Iowa. As one moves away from this center to the south, east, and west, Woodland manifestations tend to thin out, and in many instances to lose culture purity. The distribution of Woodland mounds roughly parallels the distribution of strong, unadulterated Woodland dominance, and the area of concentrated Woodland mound distribution lies largely within Wisconsin and Minnesota.

The position that American Indian pottery has a common American origin is based, primarily, on the premise of parallel geographical distribution for pottery and maize, the latter clearly established as of American origin. Until rather recently, this parallel distribution was universally accepted as fact. It was admitted that the pottery area extended farther north than the maize area, but it is logically conceivable that climatic limitations applicable to the distribution of maize would retard the spread of ceramics less effectively. Even the recently established occurrence of pottery throughout the entire Plains area, including eastern Colorado, Wyoming and Montana, and in Idaho, does not necessarily upset the maize-pottery complex, since the preliterate distribution of maize as related to this area may be imperfectly known. But if further research should establish the former presence of ceramics more and more remote from the climatically limited maize area, the parallel-distribution argument would grow correspondingly weaker; and a demonstration of the occurrence of pottery at a series of sites extending, let us say, across the Mackenzie Valley to Alaska would render such an argument inadequate as a premise in support of the common central origin of all American Indian wares.

No such distribution can be demonstrated at the present time, but recent research in upper inland North America from eastern Colorado to Alaska, and in Asia, has produced data directly bearing on the problem of pottery distribution on this continent, and indirectly pertinent to the question of origin for a certain ceramic ware and the related culture facies, generally known as Woodland.

Some of the outstanding criteria may be briefly summarized as follows: First, Woodland-like ceramics, in instances associated with other Woodland determinants, have been reported from Nebraska,[84] eastern Colorado[85] and eastern Wyoming.[86] Second, pottery and

[84] Bell, Earl, unpublished field notes.
Hill, A. T., unpublished field notes.
[85] Renaud, E. B., personal report and exhibition of specimens, 1931.
[86] Renaud, E. B., personal report and exhibition of specimens, 1931.

mounds, both described as of Woodland character, have been reported as encountered in quantity in Manitoba, north of Lake Winnipeg.[87] Third, some of the pottery collected by de Laguna[88] in Alaska, in the central Yukon Valley, is reported to exhibit the conoidal base shape and other Woodland-like characteristics not representative of known Eskimo pottery. Fourth, von Richthofen[89] has published an article in which there are descriptions of materials collected in eastern Siberia. The pottery illustrated in this article, as pointed out by the author, is strikingly similar to Woodland ware. Fifth, I have recently examined two potsherds collected by Alonzo Pond in central Mongolia, now in the Logan Museum, Beloit, Wisconsin. These specimens are small, undecorated body sherds. However, the temper, texture, and cord-malleated outer surfaces make them indistinguishable from sherds characteristically encountered in Wisconsin or Minnesota.

Although these data are few in number and scattered in extent, they are not selected, since they represent what is known for the area considered, and they are unanimous in their implications. When added to the criteria previously discussed, they certainly suggest the possibility of a distribution of at least one American Indian ceramic ware not only entirely independent from maize distribution, but actually extending from central North America by a northwestern route into eastern Asia. Whether other Woodland fundamentals are to be found associated with the ceramics is not indicated for the area north of Manitoba. The distribution of Woodland traits suggested by these finds lies along a very logical migratory route from Asia to the Great Lakes area, including the Yukon and Mackenzie valleys.

To sum up briefly, the Woodland Pattern complex is encountered in its most unadulterated, richly variant, and quantitatively dominant manifestations in a region centering in or near Minnesota. From there, its purity, detail variety, and dominance fade progressively toward eastern, southern and western margins. All available age criteria indicate that the oldest manifestations are in the western rather than the southern or eastern subdivisions of the Woodland distributional area. The culture pattern is fundamentally different from any manifestations reported to the south of the area of its dominance, other than is most

[87] Ekholm, Gordon, personal communication, 1937.

[88] de Laguna, Frederica, Archaeological Reconnaissance of Middle and Lower Yukon Valley. This series II, 1: 6–12, 1936.

Linton, Ralph, personal report on pottery specimens collected by de Laguna, 1937.

[89] Anthropos, Vol. 27, Nos. 1–2, 1932.

logically to be accounted for by a southward diffusion of the Woodland Pattern itself. Reports from scattered areas north of Minnesota, and in Alaska and Asia, indicate the occurrence of Woodland-like pottery, associated with Woodland-like mounds in Manitoba, along a logical migratory route from Asia.

An unbiased consideration of these criteria *in toto*, as weighed against the premises advanced in support of the hypothesis for a common central origin for all American Indian ceramics, an hypothesis which treats of a single culture product only rather than a culture complex, will serve to justify, I believe, the advancing of an oppositional hypothesis: that a culture closely related and directly parent to the Woodland Pattern, with pottery but without agriculture, originated in Asia, came into America and inland by way of the Yukon and Mackenzie valleys, had a special development in a locale centering just south of Lake Superior to become what is now classified as the Woodland Pattern, and diffused from that center west, south, and east to its maximum area limits, which I do not believe are as yet well defined.

Admittedly, some of the data employed in this argument are derived from quantitatively and qualitatively inadequate research, and the primary purpose of advancing this hypothesis at this time, in addition to offering for future serious consideration a possible explanation of the dissimilarity between Woodland and other Mississippi Valley patterns, is to focus the attention of students in this area on the need for well organized research in a long neglected and practically virgin field which includes central Canada and interior Alaska.

ABORIGINAL POTSHERDS FROM RED RIVER, MANITOBA

VLADIMIR J. FEWKES[90]

During his recent field work in south-central Canada, Professor A. Irving Hallowell obtained from Mr. W. H. Rand, Keeper of the Manitoba Museum, Winnipeg, a sample series of potsherds from several localities in the valley of the lower Red River, north of the city of Winnipeg. This material is said to have been collected on the surface and in one instance, at Lockport, in presumably archaeological (occupational?) deposits. Through the kindness of Dr. Hallowell I have examined the sherds from the standpoint of technology. The following is a brief note on some of my observations which are here presented merely as a matter of record and for the purpose of calling attention

[90] Peabody Museum, Harvard University, Cambridge, Massachusetts.

to the appearance of pottery in the wider environs of Lake Winnipeg. I am obliged to confine this note to the methods of construction, surfacing, and embellishment; it has not yet been possible to pursue an exhaustive technological analysis.

The collection here considered contains thirty sherds; of these fifteen are rim fragments and fifteen from various portions of the body, but none are bottom pieces. Their description, restricted as already specified, may be rendered as follows (Figure 11).

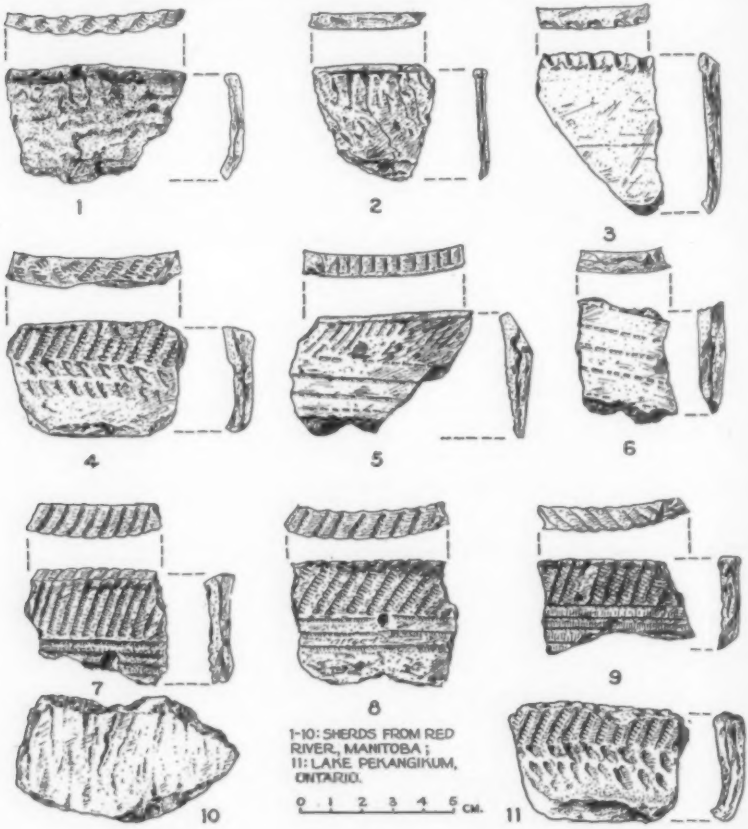

FIG. 11

I. CONSTRUCTION

Twenty-five sherds examined (macroscopically as well as microscopically, using a binocular microscope) for criteria of manufacturing technique reveal clear traces which identify the process employed. The determining, ever present factor, is a line of separation, sometimes quite faint, sometimes rather pronounced, which follows the plane of contact and incomplete adhesion of the original, plastic pieces of paste with which the potter operated. From the sherds at hand it has not been possible to reconstruct the likely original nature of the individual morsels of paste, but something like irregular slabs seems to be suggested. The vessels appear to have been constructed by a molding process, presumably externally over a form; however, internal application cannot be unqualifiedly disproved. Evidently the molding was done with the aid of a firm form, such as one fashioned from wood;[91] over a basket (?) or perhaps a contraption made of twigs especially for the purpose,[92] over a sand-filled bag of raw hide;[93] over a paunch, and so on.[94]

The constructional weakness of specimens built by such procedure lies in the incomplete bonding of the juxtaposed and superposed tectonic components of the vessel. Wedel,[95] dealing with his "second major type of Pawnee ware," states: "The tendency of these pieces to crack [along the midline of the wall] is so marked as to lead one to the conclusion that they were either not dried thoroughly before firing, or else that the baking process was very improperly carried out." However, these two conjectures are difficult to appreciate from the technological standpoint.

The term laminated molding, it seems to me, provides a convenient means for a provisional designation of this technique of construction. It is likely that the potter first produced the basal part of a desired vessel,[97] perhaps by modeling in plain hands (so often erroneously called "mold-

[91] Grinnell, 1893, p. 255, a Pawnee example, and Hunter, 1824, p. 289, a Kickapoo (?) example—cf. Hunter, 1823, p. 12 for tribal identification.

[92] Hunter, 1824, p. 289, a Kickapoo (?) example.

[93] Wissler, 1910, p. 26, a Blackfoot example, only traditionally remembered.

[94] Speaking of ceramic construction in the middle Mississippi Valley, Holmes, 1886, p. 372, refers to observers noting "modeling [molding] over gourds, and over blocks of wood and masses of indurated clay shaped for the purpose" at the time of early European contacts.

[95] 1936, p. 69.

[97] Abbott, 1936, speaks of flat as well as of rounded bottoms amid the sherds he found at Lake Wanipigow, Manitoba.

ing"), using a dab of paste, pressing the fingers into it, and drawing the wall out more or less concurrently.

It may be of interest to note in passing that the pottery from various mounds along the lower Red River, as reported by Montgomery,[98] reveals spiral coiling as the most characteristic constructional technique. In my study of the Catawba pottery, which includes a discourse on the much confused subject of "coiling" in ceramics,[99] I have come, provisionally, to the conclusion that in the Americas true, *i.e.*, spiral coiling is a historically later phenomenon than the constructional process which I segregate under the term circuit building. The latter is exemplified by the Catawba who, incidentally, also practice building by rings, and by the modern Pueblo of San Ildefonso described by Guthe[100] as "moulding." I am not acquainted with stratigraphic observations and chronological deductions made at sites in the Red River Valley; yet I should suggest that the manner of construction in pottery be given due consideration as a possible aid in disentangling temporal and cultural factors.

II. SURFACING

Plain hand-smoothing, identified by finger striations, and tool-compacting (usually called "burnishing"), are represented in a ratio of approximately one to two. The latter process is clearly distinguishable by individual, more or less aligned, narrow streaks which have a flat plane in transverse cross section. In certain instances the termini of the diagnostic marks are fully recognizable; these suggest that the potter operated the tool of bone, stone, or wood (?) in such manner as to effect short strokes. Some luster is present on sherds exemplifying both hand-smoothed and tool-compacted surfacing; it is my opinion, based on observation of several Catawba potters, that this quality is due to a subsequent, perhaps wholly independent treatment, *e.g.* polishing with a skin or a cloth, possibly with the aid of some organic medium such as fat.

III. DECORATION

The grouping as arranged here is entirely tentative and without regard for any particular scheme which might perhaps be employed. My aim is to describe the pieces, not to classify them or discuss types.

[98] 1906, pp. 640 ff., Pl. XXXI: d–f, and 1908, pp. 33 ff., Fig. 16, Pl. III.
[99] MS now ready for the press.
[100] 1925, pp. 31 ff.

1. *IMPRESSED VARIANTS.*

a. Dimpling and indention. Under dimpling are included round or ovoid depressions, whereas indentions embrace angular forms; in either case the depth of such a depression is more or less equal to its maximum plane dimensions. The dimples are executed with a shaft tool which may or may not have required specific shaping of its working terminal. Indentions, on the other hand, depend on a dressed tool, *i.e.* one with severe margins at its working end. Both in dimpling and in indenting the tool is held in a more or less perpendicular position in relation to the plane of the wall. In the samples here described the execution is rather superficial; apparently, the dimples and indentions served only as complimentary features. While wooden and bone tools should have best served the purpose in effecting this technique, it is conceivable that a stone medium, either specifically fashioned for the occasion or not, would likewise fulfill the potter's need.

b. Pitted and embossed effect. In several examples a depression was produced by sinking the blunt end of a shaft tool of bone, wood, or stone (?) into the surface of a vessel's wall and pressing this inward to form a pit and to bring out, at the same time, a corresponding wart-like rise on the opposite side of the wall. The Manitoba pieces which I examined are pitted predominantly on the outer side of the wall and embossed on the interior; only one sherd[101] illustrates the reverse case.

c. Wrapped tool stamping. This variant of decoration can be executed with a round-bodied shaft, or with a flat, edged "spool," around which is wrapped cord, wood splint, grass blade, or similar material. In the Manitoba samples the use of splint and cord is evident; but I am not yet able to say whether the cord was made of sinew (which I am inclined to suspect, but cannot at the moment prove) or textile. With the aid of a high-power binocular microscope one can usually distinguish traces of lint in cases of textile application; such traces should not be present when sinew is used because of the necessity of operating with a moistened element for reasons of pliability. In any event, this point requires greater attention than I have been able to devote to it thus far. There are no unambiguous examples of the use of a paddle stamp or of a comb, *i.e.* a carved tool for composite (or simple, for that matter) patterns, in the material from Manitoba here described. The stamping with a wrapped tool appears to have been done by partial rolling (but not by "rouletting" on the principle of

[101] Comparable to that shown in Willoughby, 1935, Fig. 111:O.

wheel-rolling, as originally deduced by Holmes.[102] which, I firmly believe, is totally unsubstantiated in aboriginal American ceramics), by rocking, or by straight pressing.

With the permission of Dr. Lloyd A. Wilford, I quote from his doctoral thesis (MS) the reference to a surface find from Minnesota of "an artifact that is unquestionably a stone stamp used for imprinting the roulette design on unfired clay. This stamp is flat and roughly elliptical, though one end is wider than the other. It is of greenstone, polished on both faces and all edges. The narrower end is the business end. This has thirteen grooves cut across the edge, at right angles to the edge, and parallel to each other. A portion is chipped which held at least two more grooves. When this end is held against clay and pressed with a rocker motion a perfect roulette is produced. The wide end is decorated with small grooves which do not go across the edge, but cut through the upper lip only. Fifteen such nicks are identifiable. The stamp is 113.5 mm. long, its maximum width is 58 mm., and its maximum thickness 16.5 mm., though the business end is thinned to 2 or 3 mm." This, as far as I know, is the first record of a stone stamp for pottery decoration in North America. It is possible, of course, that stone stamps of this kind, or of a seemingly "crude" appearance such as those recently reported from northern Europe[103] may have escaped attention. Insofar as bone variants of stamping tools are concerned it seems advisable to suggest reëxamination of collections. In my recent studies of private collections on Cape Cod I noted one such example, carved out of a portion of an animal skull, and producing an effect very similar to that appearing on local archaeological pottery (Woodland Pattern). The specimen is in the possession of Mr. Cleon Crowell of East Harwich, who excavated it in a nearby site. (I gratefully acknowledge Mr. Crowell's kind permission to study his extremely important and instructive material and to publish about it as occasion may warrant.)

d. Loose cord impressions. These, decidedly indistinct in the samples under discussion, suggest that something like a "mop" may have been used, and that the effect was achieved either by stroking or by impressing the surface. This, as is well known, is a very common manner of embellishment in American ceramics.

e. There are two sherds with an unevenly tool-compacted surface under which, somewhat subdued by the tool, are areas with scattered

[102] 1903, p. 79.

[103] Voevodskij, 1936, pp. 70 ff., Pl. VI: 3–5.

shallow depressions, which are strongly reminiscent of a treatment attainable by corn cob rolling. Similar pieces were shown in the special exhibit from Signal Butte, Nebraska, at the Academy of Natural Sciences, Philadelphia, on the occasion of The International Symposium on Early Man.

2. *PUNCTATE VARIANT.*

a. Individual, disjointed punctation. This manner of decoration is produced with a shaft tool, specifically fashioned for the purpose. The working end of such a tool need not necessarily have a sharp tip; blunted, squared, rounded, and beveled termini are in evidence. The tool appears to have been held at a slanted angle as it penetrated into the vessel's surface. This characteristic distinguishes the punctate technique from dimpling and indenting. At times the tool was slightly drawn subsequent to its maximum depth penetration, so that a short gash resulted. As a rule the individual punctations reveal precise traces which identify the original manipulation of the tool; the process involved a combination of pressing and gashing, or perhaps incising, for which reason I place the punctate technique under a separate heading.

b. Furrowing. The same principle applies here as in individual punctations. However, in furrowing the tool is not fully withdrawn from punctation to punctation, so as to detach the series within a given line, but is allowed to incise (groove, or gash, as the case may be) the intervening spaces; the series, therefore, is connected within the upper plane of the wall. The result is an intermittent order of deeper and shallower marks, all joined successively and aligned.

3. *INCISED VARIANT.*

There are only a few examples of this category of decoration; they are simple incisions made with a sharp, rather fine point or blade.

In any variant the decoration is limited to the neck and rim which, as a rule, has a horizontal, more or less flattened lip; it appears, with the exception of the embossing incidental to the pitting, only on the exterior surface. The motifs are solely rectilinear. The most frequent design consists of parallel, linear arrangement, either horizontally or obliquely placed well above the shoulder and carried, as a rule, on to the plane of the lip.

With respect to color I should like to point out that my attempts to match the core of the sherds met with discouragement because of the high degree of variance due, without exception, to reducing con-

ditions in firing. Just what this observation may mean, if anything, I am unable to say at the moment. The surface colors, taking into consideration basic values, range from drab to wood brown, and from deep mouse gray to dark mouse gray, on the outside; and from vinaceous buff to Japan rose, and from deep mouse gray to dark mouse gray, on the inside (after Ridgway, 1912).

I must defer description of the texture, inclusions, firing, and so on; the preliminary examination by test immersion under a petrographic microscope which I have made is not adequate for the purpose.

From the standpoint of construction, surfacing, and decoration, the sherds here mentioned find close analogies in the area south of Lake Winnipeg, below the Canada-United States border, roughly between and including the Dakotas in the west and Illinois in the east.[104] The agreement is also close with respect to the nature of the fabrics (*i.e.* the fired pieces, in which the clay or paste are no longer recognizable due to their altering in the process of firing), their inclusions, and the manner of firing. Superficially, this material discloses many features common to the wares formerly called "Algonkian," now classified as Woodland. However, it cannot easily be assigned to a people of Algonkian ethnic affinity for, as Hallowell (MS) finds by research in native genealogies and traditions, as well as in historical records, the earliest Algonkian-speaking group in the area, the Cree—17th century—had no pottery; and it remains to be proved that the Ojibwe, locally known as Saulteaux, had any acquaintance with ceramics before or after they moved westward in the 18th century, since the contemporary groups have no tradition of the craft. On the other hand there is ample evidence to show that Siouan peoples of this area not only made pottery, but that the Assiniboine once occupied the region around the Lake of the Woods and along the southern portion of Lake Winnipeg. A sherd from Lake Pekangikum, Ontario (52° N. Lat., 94° Long.), obtained by Dr. Hallowell in 1932, represents the most northerly distribution of pottery yet professionally recorded in central Canada. Indians have picked up sherds here and there along the Berens River, 52° N., and even farther north.[105]

The Manitoba material is strongly suggestive of Siouan or Caddoan provenience; there are similarities with wares from sites historically attributable to one or the other of these groups. Amid the Mandan material contained in the collection of Peabody Museum, Harvard

[104] Strong, 1935; Wedel, 1936; Cole and Deuel, 1937; and Wilford, MS.
[105] Hallowell, MS.

University,[106] I noted several comparisons in fabrics, surfacing, and forms; however, the Mandan decorated material is predominantly cord-impressed.

That it is extremely hazardous and distinctly subjective to venture, in view of our deficient data, on assigning archaeological material a given tribal or linguistic unit, is, I believe a well recognized principle; but this principle has not always been respected. The loose use of "Algonkian" is a specific example to which many have called attention. Professor Albert Jenks[107] found pottery at historically known Siouan village sites, corresponding to the Black Duck Lake ware, which occurs commonly in Minnesota, but which cannot be assigned to tribal or linguistic divisions. Yet this type of pottery, in turn, resembles wares that have been called "Algonkian" in Wisconsin and New York and which, to quote Jenks,[108] "Holmes, it now appears with more propriety, had earlier called 'archaic northern.' "[109]

Densmore[110] inferred Chippewa provenience for the sherds and human bones which she collected "in 1918 . . . in the vicinity of Lake Winnipegosis where some old graves had been 'washed out' . . . The decorations of these [sherds] were typical of the pottery found in this region [citing only Holmes, 1886, and without specification], combining imprints of roulette, twisted cord, woven fabric, sharp stick, or thumb nail . . . ." The authoress did not mention the disposal of the sherds. The skeletal finds, however, she submitted to Dr. Hrdlička who "reported that 'the bones are those of a male skeleton, in all probability Indian. They are possibly not over a few decades old.' The large [long] bones were pierced near one end, the puncture showing the use of a conical instrument and breaking into the marrow cavity." Dr. Hrdlička's statement that the human bones in question "are possibly not over a few decades old" in no way establishes a terminus for dating the finds. Presumably, the condition of the "washed out old graves" hampered associational deductions. At any rate, it seems in point to note in passing that in Minnesota Wilford (MS) ascribes "tapping on long bones," *i.e.* the same phenomenon as the "piercing" specified by Densmore[111] to a period of antiquity antedating historic Indian occupation of the region. The sherds and human bones from the vicinity

[106] Spinden and Will, 1906, pp. 175 ff.
[107] 1935, p. 14.
[108] *Ibid.*
[109] Holmes, 1903, p. 184.
[110] 1929, pp. 162–163.
[111] *Loc. cit.*

of Lake Winnipegosis may not, then, represent either "Algonkian" or "Siouan" remains.

With so inadequate an understanding of the role of pottery in the Plains and Plateau areas, extreme caution in the use of catch phrases is imperative. It would, at this time, be as incongruous to claim an "Algonkian" underlying foundation in the region of the Great Lakes and farther west as it would be to consider "Siouan" strains all the way out in New England. A proper appreciation of this subject which, obviously, is not a problem, but an unknown quantity, depends in the first place on obtaining dependable data by field work. But it is significant to remember the concept now called the "Woodland Pattern." This concept, originally proposed by McKern (1934), and later adopted by the Indianapolis Conference of 1935, embraces the archaeological culture manifestations formerly referred to as "Algonkian." The latter term, strictly speaking, has a purely linguistic connotation.

Through the courtesy of Professor V. Gordon Childe I recently examined a sample collection of the so-called comb ceramics from Finland and northeastern U.S.S.R. Moreover, in the Peabody Museum, at Harvard, I subsequently studied a similar, technologically very instructive group of fifty-nine sherds from presumably three different sites near Balakhna, province of Nizhni Novgorod (Gorky?), U.S.S.R. (catalogue numbers E 3610, 3611, 3612), excavated by V. I. Kamenskij in 1906. In both cases, the material, dating roughly from the second millenium B.C., has striking analogies with the specimens from the region of Lake Winnipeg and from areas farther to the south and east. The agreement is particularly pronounced in: construction—laminated molding, occasionally, in the European samples, with a finishing rim-fillet which is falsely suggestive of "coiling"; surfacing—plain hand-smoothing or tool-compacting, the latter either matte or lustrous; decoration—stamping or impressing; quality of fabrics—texture, inclusions; nature of firing—open hearth exposure and fuel-smothered variants; shapes—almost identical body, neck, rim, and lip forms.

Relationships in ceramics of the northern zone of Eurasia and North America have recently been discussed by von Richthofen.[112] It must be remembered that he had not, at the time of his writing, seen any of the relevant American material. Without autoptic acquaintance he was, therefore, distinctly handicapped; his work requires certain revisions, and obvious additions are necessary since the date of his

[112] 1932.

preparation of the paper for the Congress of Americanists in 1930. Tribal identification needs revision; distribution, apparently assumed in some cases, requires alteration; differences in Alaskan material must be stressed; and changes in general plotting are imperative. The paper does, however, furnish a very useful basis for a general orientation and serves as a starting point in broader studies. Whether or not historical connections can be established from the Baltic to the Chesapeake Bay remains to be proved; in point of fact that question is, really, yet to be investigated as such. The similarities in some of the sample materials we have thus far are indeed suggestive of some relationship, but the time element, superficially at any rate, seems rather distorted. This circumstance favors the Old World as the source—at least in the initial phase of the spread of opportunities of pottery making in the northern portion of the American continent from which such manifestations may have been derived. These manifestations suggest a development perhaps essentially sub-boreal (with local variations) in the ecological respect: hoe cultural and, under conducive conditions, also pastoral, as well as dependent on hunting and fishing, in economy; and essentially sessile, although not adverse to nomadism, in the manner of living.

The view still more or less prevails that the "Algonkian" did not become a potter until he reached the Mississippi area. Wickersham[113] seems to be responsible for the historically earliest record of this view. A theoretical "rationalization" of an independent invention of pottery in the Woodland Pattern (or, more likely, perhaps, among the primary "Algonkian") might, with some, present no difficulty. Either of these alternatives loses its attractiveness when we detach pottery from historically identified tribes and consider the archaeological material strictly from the standpoint of its tangible values.

In recording the sherds from around Lake Winnipeg I am motivated by a desire to call their existence to a more general attention than has hitherto been the case and to focus attention of those within reach of the field to its promising potentialities. The collection, now in my hands for the purpose of additional studies, is normally deposited in the Department of Anthropology, University of Pennsylvania.

It seems desirable to stress the fact that the remarks here expressed are not intended to advance an hypothesis favoring an Asiatic or Eurasiatic origin of the Woodland Pattern. I am simply interested in any and all implications arising from the subject *per se*. Theories and hy-

[113] 1892, p. 316.

potheses would, in view of the wholly inadequate, fragmentary evidence before us, be quite out of place. By way of a concrete suggestion, I should like to stress the necessity of a comprehensive survey of the existing collections and of a field reconnaissance in the pertinent parts of Canada and also in Alaska. A trustworthy historical synthesis is certainly not to be entrusted to nor attempted by any one single investigator. In the north, where field conditions are often quite trying, coordination and cooperation of interest are particularly essential. In any event, before the interesting question of Eurasiatic-American contacts can be considered by archaeologists, we must have much more in the way of indubitable factual data than are now at our disposal.

I wish to express my gratitude to Professor A. Irving Hallowell, University of Pennsylvania, to Professor V. Gordon Childe, and to the Peabody Museum of Harvard University, for placing the material here dealt with at my disposal and granting me the privilege to publish about it. I am equally grateful to Professor Frederick E. Ehrenfeld, University of Pennsylvania, and to Dr. Edgar B. Howard, Philadelphia Academy of Natural Sciences, for providing me with the necessary facilities with which I pursued the study leading to this notice. To Professor Hallowell I am particularly obliged for sundry ethnological data derived from his field notes and manuscripts; and to Dr. Lloyd A. Wilford, for the permission to quote from his hitherto unpublished doctoral thesis.

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INDEPENDENT INVENTION VERSUS DIFFUSION[114]

HAROLD S. GLADWIN[115]

When Mr. McKern wrote to suggest that I might wish to add a word to the discussion of those cultures which may show some indications of Old World contacts, my first impulse was to burst out with a long list of analogies in support of such an hypothesis. After thinking it over, however, I realized that this had often been done in the past without success, and it occurred to me that it might be more pertinent to try to explain how one diffusionist has reached his present estate, and what symptoms to look for in a person who has been subjected to this form of contagion.

One begins one's career, as every good archaeologist should, with a respectful belief in the opinions of one's friends or professors. In 1925, when I began mine, this belief could be said to be an entrenched creed to the effect that:

1. All American Indians are of one race.
2. Our Indians came to America from Asia, but,
   a. they were neither old enough to be palaeolithic, nor
   b. young enough to have known anything about pottery or metals before they arrived here.
3. Maize was derived from *teocentli* and, since *teocentli* was a Mexican plant; ergo, agriculture started in Mexico.
4. With agriculture as a base, all higher civilization in the Americas had sprouted in the Archaic horizon of Mexico, whence it had spread to the outlying cultures.

Armed with this faith, one experienced a satisfying sense of assurance that our native archaeology was built on a sure foundation, and one could blast any silly comments by laymen when, in the course of casual conversation, they referred to similarities between Mayan pyramids and those of Egypt. Perhaps these laymen had been reading Spence's theories of Atlantis, or Elliot Smith's Heliolithic Cult; perhaps they had visited Java or Cambodia and were unduly impressed by superficial resemblances; in any case, our answers were pat and to the point.

Unfortunately for some, or one, of us, these lay friends were not always so superficial nor so easily silenced. There may come a time

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[114] Title contributed by the editor.

[115] Gila Pueblo, Globe, Arizona.

for you, as it did for me, when you may be called upon to answer the questions of a man who has not been properly educated in the articles of our archaeological faith; he may even be intelligent and honestly seeking information, and you may realize, as I did, that our fixed formulae are sometimes rather deficient in logic and common sense. It is when this point is reached that a little soul-searching is in order, and I would say, without hesitation, that this is the first symptom of a mental weakness which will quickly and inevitably develop into that particular obsession, the victims of which are known as diffusionists.

On such an insecure foundation is the temple of our dogma built that it requires only a little sincere self-questioning to destroy the training of a life-time.

What, it will be asked, can the questions be which can wreak such havoc in an otherwise orderly mind?

My first impulse would be to dodge this issue by saying that these are the questions one must ask oneself in the aforementioned huddle with one's conscience, and I may remark here that the most obvious characteristic of a man suffering from diffusion-mania is an uncanny ability to squeeze out of tight places and to undermine our dogma by ridicule and other unfair methods of provocation (at least, so I am told); but, in this case, I think it is only fair to pose a few sample questions.

When asked, for instance: "How would you account for a metal age in America needing only 600 years for its fulfillment as against 8000 years in Asia?," your answer would be: "The American Indians were smarter and did not need so much time." What other answer is possible? But is this borne out by subsequent history? Has the American Indian ever given any other evidence of such marked superiority over all the rest of mankind?

To the question: "Where is the evidence of the early stages which preceded the great cultures of Mexico, and Central and South America?," your answer would probably be: "We have not yet dug enough." But does this answer show adequate respect for the ability of the men, the prominence of their institutions, the means and energy which you know have been expended in these areas? And how can you reconcile your answer with the fact that the best of these men are now raising the dates rather than lowering them?

To the question: "Why do you regard all American Indians as of one race?," your answer might be: "Because we have none of the Old World fossil types, and the skeletons found in our oldest horizons con-

form to the type of Modern American Indians."[116] But now suppose your imp of conscience asks you to describe your American Indian. Would you choose the broad-headed Mongoloid type, the tall long-headed Negroid type, or the even longer-headed Australoid type? And what would you answer if the same imp asked you: "How sure are you that one of these types of 'American Indians' may not be respectably ancient, irrespective of the fact that he does not look like an Old World fossil?"

To the question: "Was the bow and arrow carried into America by diffusion?," your answer would undoubtedly be: "Yes," and you would use as your justification the complexity of the instrument, depending as it does upon three working parts for its proper functioning; the bow, the bow-string, and the arrow. But to the question: "Was the loom introduced into America by diffusion?," your answer would have to be: "No," because to make such an admission would open up the Pandora's box of associated traits, such as pottery and metal.

At this point, the still small voice of conscience (logic?) might disturb your equanimity by asking: "If the bow and arrow was admittedly diffused because of its complexity, what about the eleven working parts of the loom?"

Of course, these questions are merely suggestive. No real fundamentalist should be bothered by them since, like many bacilli which we normally carry in our bodies, these questions have been known for years, but no one pays any attention to them. But, like bacilli, these questions are apt to bring about an acute condition when they combine with other germs. A trait such as that of the grooveless axe, for instance, is perfectly harmless by itself, and when this is found in Africa, in the Near East, in the Far East, in Melanesia, and in North America, it is a simple thing to laugh it off as something as universal as the common cold. The same holds true of a bark bucket, let us say. But when we begin to find that some peoples on the west coast of Africa, in Cochin-China, in New Guinea, and in New England all possess both the grooveless axe and the bark bucket, the universal aspect begins to dim, and it is equivalent to a common cold plus a temperature. If to these two traits there should be added the making of grey or brown pottery, decorated by cord-marking or incising, it would be equivalent to the appearance of a rash on the patient with the feverish cold.

At this point most people would be inclined to call in the help of a doctor, but, if you should happen to employ a doctor of philosophy, it

[116] This was Dr. Hrdlička's answer at Philadelphia, March, 1937.

is almost certain that he would tell you on no account to be alarmed since such a combination of symptoms was merely one more instance of the psychic unity of mankind. You might be convinced, in which case you would be at one with the three little monkeys who hear no evil, speak no evil, and see no evil. But the stirrings of conscience might lead you to undertake an investigation on your own account, in which case you would find that this combination of symptoms can be traced from Africa up the west coast of Europe, eastward through Poland and Russia, Siberia, China, Japan, and Melanesia, and even into North America from Oregon to New England.

Sometimes a trait is missing, but more often others are added; such as bark canoes, bone gouges, adzes, and effigy flints. You may regard it as of importance if you also discover that the victims of this malady are usually more Negroid than Australoid or Mongoloid.

At this point you are scarcely to be blamed if you come to the conclusion that you are dealing with a case of contagion, or diffusion, and decide to dismiss the doctors and call in a good plumber or even a stock-broker for consultation.

If, however, you are still unconvinced and the diagnosis of psychic unity still holds glamour for you, turn your attention to the symptoms of another complaint, those benighted heathen who prefer the spear-thrower to the bow and arrow. To the spear-thrower you will add the curved throwing stick, or boomerang, the bull-roarer, scaffold burial, and amputation of finger joints.

When this combination occurs in the Australian ward of the hospital and a similar combination is found in the Texas ward, would you think it safe to let the doctors of philosophy put both the Australoid and the Negroid patients in one room because they thought all were suffering from psychic unity?

And then what about Pygmies, Negritos, and Papuans, who, having about as much culture as a frog has feathers, are no doubt ardent advocates of the theory of the psychic unity of mankind.

From what has been said, a man should have no difficulty in making up his mind as to whether or not he harbors any of the germs of diffusion. Having asked and tried to answer his own questions, the effect can be seen at a glance in his mirror. If he remains a dyed-in-the-wool fundamentalist, the wrinkles of doubt will still be there; his family will continue to suffer from the fits of gloom and the unreasoning outbursts of a mind in torment, waiting in vain for news of the discovery of the ruin which can be made a national monument as the birthplace of the American Indian who first invented pottery, or the loom, or

cast copper, or was responsible for any one of the many other higher traits.

But if, after his nightly vigil, he sees a new day dawning, diffused with radiance, he will evince a smug self-satisfaction and peace of mind theretofore unknown. To him three-quarter-grooved axes from China will be things of great beauty, instead of something more which must be ignored. As the evidence in North America grows warmer, he will not be compelled to seek the inhospitable shores of Antarctica to find seclusion.

When serologists show the differentiation of peoples on the basis of agglutinogen tests,[117] the care-free diffusionist will be able to chuckle to himself when distraught philosophers are driven to explain that such blood groups originated by duplicate independent invention.[118]

When he realizes the abyss which separates the Woodland Pattern from the Southwestern-Mexican patterns of culture, the diffusionist will not have to burn his midnight oil wondering how on earth he will be able to find two separate foci of native independent origins of civilization; this fortunate man does not have to find any foci of independent inventions.

When Hooton says that certain physical types at Pecos are Negroid because they resemble the negroes of east Africa more closely than they do other types at Pecos, what happens to the fabled American Indian type? The diffusionist can gloat as this hallowed scare-crow takes its proper place beside the Wizard of Oz as a racial type.

In conclusion, a few words of warning to the man who sincerely invites his soul. Beware of letting it be known that you are contemplating diffusion; it may make sense, but it will also make you lonely. Above all, do not plunge in off the deep end and conjure up visions of impossible voyages across the Atlantic or the Pacific. Don't harp on isolated analogies, however significant they may seem; it is much safer and sounder to wait and build up assemblages around a few analogies. Others will inevitably turn up. And last, but not least, avoid intolerance; you must remember that the independent inventionists can be expected to be rather sensitive since they have had no word of encouragement for many years, and hope deferred maketh the heart sick.

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PROBLEMS SURROUNDING THE CLASSIFICATION OF CERTAIN CULTURE COMPLEXES IN NEW ENGLAND[119]

FREDERICK JOHNSON[120]

Previously I have attempted to show that we lack, almost completely, archaeological data from large and apparently significant areas in New England.[121] It is true also that the excavation and research which has been done to date is very incomplete. I regret to say, in addition, that a number of inaccuracies and important omissions have produced results, particularly in the development of theories, which are extremely untrustworthy. A reworking of the available data and an investigation of the foundations of the various theories have brought to light a number of important facts and have made necessary several radical changes in the theoretical history of the region. These recent researches are by no means complete and so the following statements are merely tentative and hypothetical.

The data we have accumulated at present indicate that the six New England states, usually discussed as a whole, are not a unit geographically or anthropologically. In comparing the local cultures and those found in regions bounding the locality, a number of important general characteristics appear. It is obvious that New England is a marginal region which received the ends of several complex racial and cultural movements. This is not the whole story, however. Our meager data suggest that Vermont, Connecticut, and Massachusetts west of Greenfield were closely allied with eastern New York and, because of this, differ slightly from the Coastal Zone. Furthermore, the expectation that the eastern seaboard is marginal is not fully borne out because, at certain stages of the cultural development, the seaboard seems to have been the pathway through which ideas were moving north and south. There were periods during the development when cultural progress may have been due to internal changes rather than to the acquisition of ideas from without. At other times, there seem to have been local areas, "pockets" so to speak, in which the more conservative people lived, paying no attention to the changes which were taking place around them. Thus, a complicated series, or even better

[119] Delivered before S.A.A., Washington, Dec. 29, 1936.

[120] Department of Archaeology, Phillips Academy, Andover, Massachusetts.

[12] Paper read before Section H of the A.A.A.S. meeting in Rochester, New York, June, 1936.

perhaps, an overlapping of culture complexes is discovered, which cannot be explained by postulating a continuous development from an hypothetical "Early" to a generalized, and partially described "Late."

One of the most interesting and intriguing cultural expressions in New England has been called the Red Paint Culture. This complex is characterized by deposits of quantities of red ochre in which are found a number of types of stone artifacts. Rarely, human remains and bone tools have also been discovered in the ochre. The artifacts have been found varying in number from one to nineteen in each deposit. There is no consistency in the numbers or types of artifacts which are found together. In tabulating approximately 200 deposits from eight cemeteries, I have found that there is no such thing as a typical deposit. In other words, there is no one combination of types which is repeated, and every cemetery differs in many ways from the others. Apparently, the people put in varying amounts of red ochre and added any number of artifacts and ornaments which were available at the time. We seem to be dealing with a heterogeneous mass of material, the presence of which depended upon the whims of the originators. It seems possible also that the custom of depositing artifacts in red ochre may not have become formalized to a degree where certain types of graves containing certain types of artifacts were recognized by the aborigines. A further explanation of this apparent lack of order is that we may not have acquired sufficient information to make a satisfactory analysis possible: in other words, the key to the problem is still locked in the ground.

I explained at the meetings in Rochester last June that there is in existence no factual evidence supporting the several direct statements that these deposits are very ancient. In fact, the contents of some of the cemeteries suggest affiliations with cultures which are of no great antiquity. Because of the character of the available information we can do little more than partially define the existing problem and indicate the possibilities of its solution. There is no dependable stratigraphic sequence of culture complexes which includes the Red Paint types of artifacts, and so we are forced to depend upon the distribution of surface finds and the somewhat dubious association of these finds with types supposed to belong to other complexes. This procedure, unsatisfactory though it is, removes the aura of mystery and the curse of sentiment from the facts, so enabling us to see them clearly.

It has been claimed that the distribution of the Red Paint Culture was confined to the seaboard of Maine. There exist in the literature,

however, references to these deposits in Massachusetts, Vermont, and Ontario. Other important, unpublished discoveries of Red Paint deposits have been made by amateurs at Chatham and near Marion, Massachusetts. There are several others which, being incompletely described, are significant only because they imply a wider distribution of the deposits than has been noted heretofore. In analyzing this distribution and in adding to it the distribution of the types of artifacts, we are forced to develop rather radical and far reaching hypotheses.

We find a combination of artifacts widely distributed over Eastern North America. The most characteristic types are: adzes, particularly the hump-backed varieties; a number of varieties of gouges; a few types of celts; particular types of chipped spear heads, small points, and large discs; plummets; at least three types of slate points; stone tubes; bannerstones, particularly the so-called whale-tail type; various kinds of stone ornaments; slate pendants. In Vermont, New York State, and Ontario we discover various elements of this combination associated with pottery and other artifacts which have been included in the Woodland Pattern. On one site in the Champlain Valley there is a doubtful suggestion that some of these elements are associated with the Iroquoian Aspect of the Upper Mississippi Phase. Going still farther afield, we find a few of these elements, particularly bannerstones, stone tubes, types of chipped artifacts, and, possibly bone tools which are listed under Hopewellian and phases of the Woodland Pattern, as it is found in the Mississippi Valley. To the south we find suggestions that the complex as a whole may have extended as far as Stallings Island, Georgia, but, because of the paucity of knowledge concerning the littoral of the Middle Atlantic states, we can hardly do more than mention this as a possibility.

In weighing the many implications of this rapid and incomplete survey, which includes the area south and west of the St. Lawrence and Ottawa rivers, we are confronted with the probability that this complex is associated with pottery-making cultures, particularly phases of the Woodland Pattern. This possibility is strengthened by the discoveries which were made at Bluehill, Maine, during July, 1936, by the Department of Archaeology, Phillips Academy, Andover, Massachusetts. We found in a shell heap Red Paint graves and artifacts of Red Paint type in association with pottery which is almost certainly Woodland.

Collections in the National Museum of Canada, which were shown to me recently by Messrs. Jenness and Wintemberg, complicate the problem to some extent. The specimens which Mr. Wintemberg has

obtained from a site near Three Rivers, from Tadousac, and from scattered localities to the east as far as Bradore, indicate that some of the elements which we have noted above occur in this region. Near Three Rivers, plummets, a type of arrowhead, and a type of celt were found. At Tadousac the culture complex is represented by the hump-backed adze, some of the celts, a single fragment of a gouge blade, plummets, large chipped tools, arrowpoints, and slate implements—round in cross-section (punches perhaps). To the east the complex is present, but the number of traits diminishes, possibly because of the relatively slight amount of work which has been done there. Associated with these artifacts are others which, on the whole, are either of such a general character that they cannot be considered diagnostic of any particular complex or they are types whose cultural affinities are by no means clear at the present moment.

If, for the purpose of analysis, we can be permitted the audacity of separating the material from this far eastern region into several nuclei, we can add two more complexes to the already confusing picture. One is the Cape Dorset Eskimo Culture, which is appearing in the eastern section of the north shore of the Gulf of the St. Lawrence and on the northern arm of Newfoundland. The second is a group of artifacts which, south of the St. Lawrence, extending from the coast to the Province of Ontario, has been vaguely called "Algonkian." The recognition of these nuclei is empirical, for there is no evidence in existence which separates them one from the other.

The last complication which I shall mention briefly is the culture of the Beothuk, who, archaeologically at least, present a curious enigma. Howley's unsatisfactory description of the looting of Newfoundland indicates that no Beothuk remains have been found which are not post-European. We see in his discoveries a goodly number of Red Paint, or shall I say Ground Slate elements, together with various generalized "Algonkian" determinants, plus possible Cape Dorset Eskimo features. There are also certain types of artifacts whose cultural identity cannot be determined as yet.

We have come to a point where it is necessary to stop and attempt to introduce some order into this apparently chaotic situation. This can be done through the use of the method of culture classification which was introduced by McKern. Certain modifications are necessary, however. We have tried to show that there exists a complex of stone artifacts which, in various combinations, is widely distributed over eastern North America. During the discussion, it has also appeared that

in some instances this complex is associated with pottery and in others is found in non-ceramic horizons. It is also obvious, but not possible to prove definitely as yet, that this complex extends over a varying chronological scale. In supplying a basis for the placing of this group of traits in a classificatory scheme we must take into account certain characteristics of the regions in which it was found. Where the complex is discovered in the United States and in southeastern Canada, it is within the range of the distribution of pottery and agriculture. To the north and east, it is discovered in the area where agriculture is impossible and pottery-making impracticable. We are forced then to recognize that a culture complex of this sort can exist both in pottery-making, agricultural communities, and in nomadic-hunting regions. In fitting this complex into the Woodland Pattern of the McKern classification, where it appears to belong, we cannot use pottery as a general determinant of its relationship. We are forced to depend upon the similarities and differences in the several types of stone and bone implements and ornaments. Before much more can be said or done, it is necessary to analyze and classify the pottery-making cultures of New England and the Maritime Provinces, paying particular attention to the characteristics of the bone and stone industries. With this under way we may be able to contribute something toward the understanding of what happens to human beings living on the boundary line between agriculture and nomadic hunting.

SHELLS FROM MAYA EXCAVATIONS IN BRITISH HONDURAS

HORACE G. RICHARDS[122] AND H. J. BOEKELMAN[123]

Two small collections of shells obtained from Maya ruins in British Honduras have recently come to hand, and it has been thought worth while to record the species found, both from a conchological and archaeological viewpoint. When shells are found in archaeological sites, their classification and correlation of original habitats often permit interesting deductions to be made concerning trade routes or relations.

The first set was collected by Dr. Thomas Gann from a crystal burial mound near Rio Hok Skum. The locality is near Corozal in the northern part of British Honduras and about thirty miles from the boundary of Quintana Roo, Mexico. Four species were identified, as follows: *Oliva* sp., *Pecten gibbus exasperatus* Dall, *Ostrea virginica* Gmelin, *Dentalium texasianum cestum* Henderson (Plate VI, 1, 2, 4, 5).

The scallop (*Pecten*) is known from the Caribbean coast of Central America, and there are several species of *Oliva* from the same waters. While oysters (*Ostrea*) are rare or unknown in the waters of British Honduras today, they are known from places along the adjacent coasts of Yucatan and (Spanish) Honduras. On a schooner trip in 1931, Mr. Boekelman obtained the information from the lighthouse tender of Contoy Light that there were oysters near Cape Catorche, near the northeastern tip of Yucatan, and that there were large shell heaps of the mollusk nearby. He was advised that they were rapidly being destroyed for lime-burning purposes. Although there was an old oyster reef marked on the chart near Monkey River, British Honduras, no living oysters were observed on the trip until reaching Utilla Island and Puerto Castillo, (Spanish) Honduras. Although it is probable that further search would reveal natural colonies of oysters along the coast of British Honduras, it may be assumed that at the present time they are rare between Cape Catorche and the Bay Islands of Honduras, although they probably existed there within historical time.

The finding of these specimens of oyster shells with the burial near Corozal, as well as in a votive cache at San Jose, mentioned below, when added to the other known reported finds in the Maya area, presents a hitherto unsuspected line of research on sacred shells among this people.

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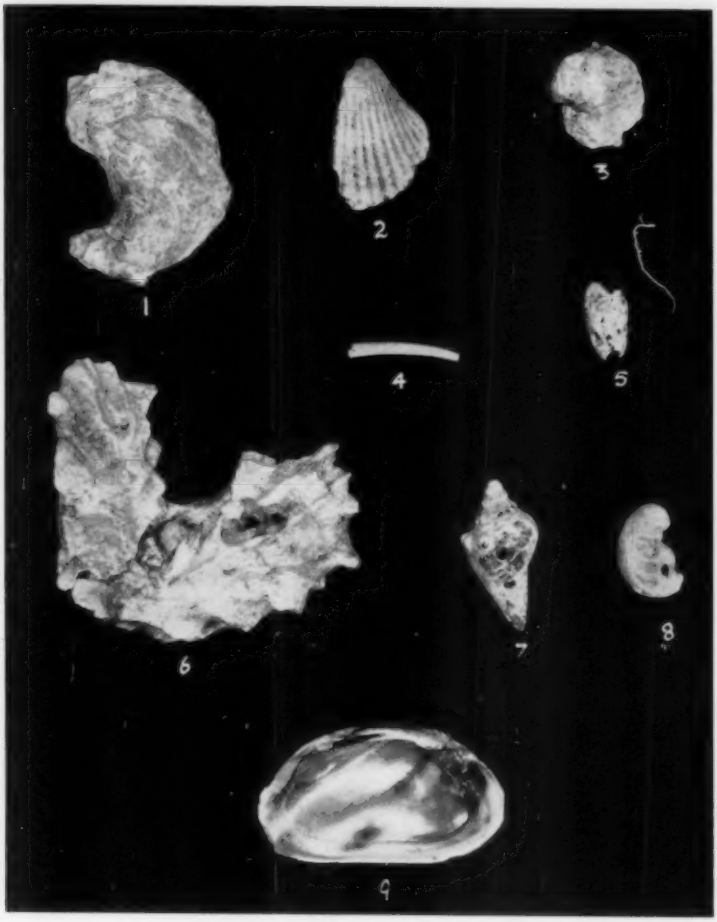

(1) *Ostrea virginica* Gmelin, Rio Hok Skum; (2) *Pecten gibbus exasperatus* Dall, Rio Hok Skum; (3) *Chama macerophylla* Gmelin, San Jose; *Dentalium texasianum cestum* Henderson, Rio Hok, Skum; (5) *Oliva* sp., Rio Hok Skum; (6) *Ostrea virginica* Gmelin, San Jose; (7) *Strombus pugilis* Linne, San Jose; (8) *Chama macerophylla* Gmelin, San Jose; (9) *Nephronais goascorenensis* Lea., San Jose. (3/4)

We are all familiar with the Maya reverence for the *Spondylus princeps*, which was equally shared by the Aztecs, the ancient Peruvians, and, according to the late Frank H. Cushing, by the earlier Pueblos.[124] The difficulties involved in securing this vivalve, due to the depth of water at which it lives, and the beauty of the white, pink, red, and orange of the shell would readily explain the adoption of the species as a source of raw material for the production of ornaments and a monetary unit with a religious basis. But in the case of the oyster, we are presented with an entirely different problem. The oyster shell lacks beauty, and is, or at least was, undoubtedly extremely common in the region; it is also easily collected. Nevertheless we find it deposited in votive caches at Uaxactun, Copan, in the Cayo District, and at Santa Rita.[125] It apparently occupied as high a position in the minds of these Maya as the much beloved Pacific coast *Spondylus*. Whereas the Spanish chronicles are replete with statements concerning the "*conchas coloradas*," or red shells, no such information has come to the writers' attention regarding the lowly oyster. It would be most interesting to discover, perhaps in some early chronicle, a clue to the reason for the Maya giving the oyster such prominence among their votive offerings. This represents but another of the unsolved problems in the field of archaeo- and ethnoconchology. For the present we are obliged to limit ourselves to simply setting forth the problem, with the hope that additional progress toward its solution will be made in the near future as our archives on this subject expand through the efforts of the WPA staff of fifteen workers at Louisiana State Museum.[126]

The tooth-shell (*Dentalium*) has previously been recorded only from the type locality at Pass Cabello, Texas, and from Monkey River, British Honduras (collected by S. L. Schumo). In addition to this being but the third locality where this species of *Dentalium* has ever been found, the occurrence of this shell is also significant from an archaeological point of view.

We are all conversant with the dominant role played by this shell

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[124] Mr. Boekelman is planning at an early date to write a paper on this bivalve from an archaeological viewpoint, accompanied by a bibliography of all authors known to him quoting the use of this shell in America. See a preliminary review in Maya Research, vol. 2, pp. 262–266, 1935.

[125] In contact with the god Kukulcan of the Maya and God B. of the codices (Quetzalcoatl). See Gann, Thomas, The Maya Indians of Southern Yucatan and Northern British Honduras. Bur. Amer. Eth. Bull. 64, p. 109, 1918.

[126] The shells were photographed as part of a WPA archaeological project sponsored by the New Jersey State Museum.

in the Pacific Northwest Coast culture, both as an ornament and as a monetary unit; but, to date, the present find represents only the second known from archaeological sites in Middle America. The first is a specimen found by Dr. G. C. Vaillant[127] at Ticoman, near Mexico City, Mexico. We do not know if this specimen is a fossil or living species. It does not appear to have been studied or identified as to species. It would be interesting to do this, so as to determine, if possible, the original habitat of the specimen, and trace the trade route over which it was carried. The writers are of the opinion that when all the shells already found in the Maya area have been classified, it is quite possible that additional specimens of *Dentalium* will be found. Due to its peculiar shape it should be readily recognized by field workers.

The shells from near Corozal occurred in a limestone matrix, and it seems highly probable that they have been derived from a fossil deposit. Ower[128] mapped the region in the vicinity of Corozal as the Rio Dulce limestone of Oligocene age. Schuchert[129] says that the Rio Dulce limestone may be of Lower Miocene age. On the other hand, Sapper[130] mapped Quaternary formations as occurring in many places in the low lands along the Caribbean coast of the Yucatan Peninsula and British Honduras; the region around Corozal is thus indicated as Quaternary. Since the shells are all of existing species it seems unlikely that they are older than the Pleistocene, and they may possibly be post-Pleistocene; it is improbable that they are as old as the Lower Miocene or Oligocene. The specimens resemble in general appearance, and in the character of the matrix, the Quaternary fossils collected by Mr. Richards from the limestone on Cozumel Island, off the coast of Quintana Roo, Mexico.[131] It therefore seems highly probable that there are Pleistocene deposits not far from Corozal, and that the shells may have been obtained from them.

The second set of shells was collected by Dr. Eric Thompson from

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[127] Vaillant, G. C., Excavations at Ticoman. Anthrop. Papers Amer. Mus. Nat. Hist., Vol. 32, Part 2, 1931.

[128] Ower, L. H., The Geology of British Honduras. Colonial Secretary's Office, Belize, 24 pages and map, 1928.

[129] Schuchert, Charles, Historical Geology of the Antillean Caribbean Region. p. 346, John Wiley & Sons, New York, 1935.

[130] Sapper, Karl, Sobre la geografia fisica y la geologia de la Peninsula de Yucatan. Inst. Geol. Mexico, Bol. 3, 57 pages and maps, 1896; Mittelamerika. Handbuch der Regionalen Geologie, Band 8, 4a, 1937.

[131] Richards, Horace G., Land and Freshwater Shells from the Island of Cozumel, Mexico, and Their Bearing on the Geological History of the Region. Proc. Amer. Philos. Soc., 1937 (in press).

the ruins of San Jose, which lie about forty miles west of Belize (17° 30′ 2 north and 88° 55′ 0 west). These shells seem to be of recent age, and two of them were perforated for use as ornaments. The following species were identified: *Ostrea virginica* Gmelin (2 holes bored in shell), *Chama macerophylla* Gmelin, *Strombus pugilis* Linne (3 holes bored in shell), *Marginella apicina* Menke, *Nephronais goascoranensis* Lea. (Plate VI, 2, 6–9).

The first four are marine species. The distribution of the oyster (*Ostrea*) has already been discussed. The *Chama*, *Strombus*, and *Marginella* live in British Honduras waters today. The *Nephronais* is a fresh-water clam and has previously been reported only from the Goascoran (Yuscaron) River on the Pacific slope of (Spanish) Honduras, and at Paso Antonio on Rio Michatoya in western Guatamala. Although these localities are a considerable distance from San Jose, it is highly probable that the same species of *Nephronais* occurs in British Honduras and much closer to the site where the present shell was collected. Our knowledge of the present molluscan fauna of British Honduras is very meager.

THE INTERNATIONAL SYMPOSIUM ON EARLY MAN

WILLIAM DUNCAN STRONG[132]

Celebrating its one hundred and twenty-fifth birthday, the Academy of Natural Sciences of Philadelphia assembled a remarkable scientific congress in that city, from Wednesday, March 17, until late Saturday, March 20, 1937. Rarely, if ever, in the history of American natural science has there been such a happy combination of scientific discussion, presentation of new evidence, and the gathering of exhibits, all bearing on the worldwide problem of man's origin and early development. Even more appreciated was the unlimited hospitality of the Academy which transmuted what might have been merely a stimulating scientific symposium into a gracious international social event. Geologists and anthropologists from the far ends of the earth were here given the unique opportunity of meeting, first in critical debate and then in easy human fellowship.

Confronted by such a vast range of material on early human biological and cultural history as was presented in Philadelphia, the narrator can only touch on a few high lights. Three days of illustrated lectures by many of the world's leading prehistorians were supplemented by four informal round table discussions.

The evening of the first day was the occasion of a delightful supper given by the Trustees of the Academy for the visiting delegates, followed by the formal opening of the Hall of Early Man. Outstanding among the wealth of exhibits, so far as the New World is concerned, were the complete mammoth skeletons with associated artifacts *in situ*, arranged as discovered near Clovis, New Mexico, by Mr. Edgar B. Howard, Mr. John L. Cotter, and others. While juvenile when compared to the very ancient human and prehuman exhibits from Java, China, and South Africa, the Clovis mammoth gave visible evidence of man's respectable antiquity in the New World.

On Friday evening delegates and visitors to the Symposium enjoyed the hospitality of the University of Pennsylvania Museum. This reception was marked by an address given by Dr. William Berryman Scott on "The Pioneers: Leidy, Cope, Marsh and Osborn," and by the awarding of degrees to Miss Dorothy Garrod of Newnham College, Cam-

[132] Department of Anthropology, Columbia University, New York City.

bridge, Professor V. Gordon Childe of the University of Edinburgh, and Professor Kaj Birket-Smith of the National Museum of Copenhagen. In addition to these formal gatherings, ample opportunity was afforded all scientists at the Symposium to meet and discuss their individual problems.

On Wednesday, March 17, the session opened with an introductory address by the Chairman, Dr. J. C. Merriam, in which he stressed the rapidly growing evidence relating to Early Man and its broader significance. Dr. Merriam was followed by Dr. G. H. R. von Koenigswald who discussed "Man's Geologic Record in Java," in the light of recent discoveries of skeletal remains and artifacts. Particularly interesting was the series of six Neanderthaloid crania from Java with associated artifacts. More recent than the remains of Pithecanthropus, these Neanderthaloid remains and stone tools tend to link Java more closely with China, Europe and Africa where comparable finds have been made.

Dr. Dorothy H. Garrod delivered an illustrated talk on excavations in caves on Mount Carmel in Palestine. The stratigraphic cultural sequences from these caves, the result of six seasons' work in the field, form an overlapping record extending from the Acheulean through the Levalloiso-Mousterian to the Aurignacian period, culminating in the Natufian, a new epi-Paleolithic culture. According to Dr. Garrod, these horizons link with Asia rather than with the closely adjacent regions of Egypt and northern Africa. This is particularly true as regards the Natufian horizon which is transitional between the Paleolithic and the Neolithic.

The fossil human remains from the older Levalloiso-Mousterian layers of these caves were discussed by Sir Arthur Keith and Theodore D. McCown in a paper read by the latter. Two human types associated with identical cultural remains occur. The first of these, the Tabun skeleton, is similar to but not identical with the Neanderthals of Western Europe. The second, or Skhul type, is represented by ten individuals. In the opinion of the authors, the plastic Skhul people were probably contemporary with the Neanderthal men of western Europe and derived from a common ancestral type. However, the Mount Carmel Neanderthaloids have other traits indicating a genetic relationship to the Cro-Magnons and may thus be considered as the prototype of the earliest modern Europeans. The morning session was concluded by Professor A. W. Broegger describing recent epi-Paleolithic finds in northern Norway suggesting an Eskimoid type of cultural adaptation.

A diversity of subjects occupied the afternoon. Dr. Paul B. Sears discussed the importance of pollen analysis studies to archaeology in America. He reported the finding of pollen in Arizona canyons indicating that such studies may be useful even in an arid country. The correlation of such findings to river terrace studies is important. In regard to exact dating, the subject has great promise but is still open to debate. Stimulating papers by Dr. Frank C. Baker and by Dr. Horace G. Richards, read by the latter, stressed the significance of mollusks as indicators of time and ecological conditions. From Pleistocene time, some 7.8 per cent of North American molluscan species or races have become extinct and the occurrence of these, or of specifically adapted forms, in archaeological horizons offers clues both as to relative dating and to the environment of the period. Dr. Philip S. Smith stated that geological evidence indicates that the gap between Asia and America in Bering Straits has at no time been wider than at present. While no proof of former land connections has been found, the exceedingly shallow floor of Bering Sea and the Arctic Ocean north of the Pribilofs indicates the likelihood of such a connection. The latter part of the afternoon was taken up by a more or less informal discussion of European and African chronology, under the direction of Dr. George Grant MacCurdy. Mrs. A. Bowler Kelley, employing a detailed series of charts, explained the new Breuille classification of Paleolithic cultures in relation to the Somme and other river terraces.

The next day's session was opened by Dr. Ales Hrdlička who, at considerable length, discussed the antiquity of man in America. After reviewing the field from 1898 to 1928, he concluded that no finds reported during that period could be confirmed as truly ancient. Turning his attention to the Minnesota skeleton, found in 1931, and reported as dating from the Pleistocene, Hrdlička reviewed the evidence. Particularly striking was the extremely close correlation between the detailed measurements of the Minnesota skeleton, as given by Dr. Jenks, and a series of fifty-five historic Siouan Indians from the same region measured by Dr. Hrdlička and Dr. Stewart. The combination of all factors seemed to Dr. Hrdlička to preclude the acceptance of the Minnesota find as representing Pleistocene man in America.

Dr. Herbert J. Spinden delivered an interesting paper, prefacing his remarks with the admission that he might seem to be "an economic royalist opposed to a new deal for American archaeology." According to Dr. Spinden, the results of New World archaeology indicate that

man came to America with a Neolithic type of culture basically related to that of certain Siberian Neolithic sites around Lake Baikal, most of which date from the second millennium before Christ. He pointed out that no old Paleolithic sites have yet been reported from extreme northern Eurasia. The high development of New World food plants, like the wide diversity of New World languages, seemed to him more logically explainable in terms of culture than as indications of any high antiquity.

Three papers by Dr. Paul MacClintock, Dr. Ernst Antevs, and Dr. Kirk Bryan were concerned with geology and early man in North America. The first of these outlined the present status of knowledge concerning the four major glaciations, stressing the five well recognized stages of the latest and better known Wisconsin glaciation. The second pointed out that ice barriers cut off North America prior to about 20,000 years ago, with one exception about 40,000 years ago, when an open corridor existed. Dr. Antevs stated that the finds of Abilene, Texas, were probably the oldest human record in America, while those at Clovis, New Mexico, were the oldest of the Folsom culture with an antiquity of 12,000 to 13,000 years. Dr. Antevs indicated that the Pinto Basin, Silver Lake, and Cochise cultures of southern California and southeastern Arizona might be equally old or older. Dr. Bryan said that the geological features of the original Folsom site in New Mexico were indeterminate, whereas there was a strong probability that the Lindenmeier site in Colorado was occupied during the retreat of the Wisconsin ice sheet.

Mr. Frank M. Setzler read a paper by Dr. Frank H. H. Roberts, Jr., on the Folsom problem in American archaeology. Dr. Roberts pointed out that Folsom man was associated with such animal forms as the mammoth, camel, and extinct bison, and that he lived in Colorado and New Mexico at about the close of the Pleistocene period.

Harold S. Gladwin stated that recent investigations in the American southwest suggested an outline of an American Paleolithic and its division into two groups, the Folsom to the north and the Cochise to the south. Since ground stone tools occur in these early horizons, comparisons with those in Europe are difficult. Mr. Gladwin suggested that the Folsom type might in some way be correlated with the Algonkian linguistic stock; and the Cochise, with the Hokan.

The afternoon was concerned with New World geological and paleontological problems. Dr. Morris M. Leighton discussed and illustrated the geological and archaeological significance of profiles of weathering.

A paper by Dr. Edwin H. Colbert was concerned with the close interrelationship existing between North American and Eurasiatic faunas in Pliocene and Pleistocene times. An interesting difference between the regions concerned the giant ground sloths, unknown in Eurasia, which in these periods moved north from South America. Just as the ground sloths and South American marsupials never reached Eurasia, so the Old World anthropoids seem never to have reached the New World. Similarly, at the beginning of the Pleistocene, mammoth and cattle invaded the New World from Asia while horses and camels reversed the process. There is much evidence that these forms persisted until relatively recent times. Thus the exact age of man associated with these forms in the New World is as yet undetermined.

Mr. C. Bertrand Schultz, reading a joint paper prepared by Dr. Erwin H. Barbour and himself, dealt with the problem of mammalian evolution in Nebraska since the beginning of the Pleistocene. A study of Nebraska river terraces suggests certain correlations between faunas and cultural horizons.

Dr. E. H. Sellards dealt with the association of artifacts and extinct vertebrates at Vero, Florida. In his opinion stratigraphic evidence precluded the possibility that the vertebrate fossils were secondary or that the human remains resulted from intrusive burial.

The day's session closed with a Round Table conference on North American chronology presided over by Professor George F. Kay. A most interesting feature was an argument between Dr. Kirk Bryan and Dr. Ernst Antevs regarding the relative dating of the Minnesota skeleton published by Dr. Jenks. Dr. Bryan believes that the covering deposit was an undisturbed and very ancient lake deposit; Dr. Antevs, that a more recent land slide was involved. To the innocent bystander the main point at issue seemed to concern the accuracy of their respective informants due to the fact that the discovery resulted from road work and the remains were removed without proper scientific observation and supervision.

From both the dramatic and the scientific viewpoints the contribution of Père Teilhard de Chardin marked the high point of a splendid symposium. His well illustrated paper on Peking Man, viewed in relation to geological and paleontological correlations between North China, Malaysia, and Central Europe, was the first paper on Friday. To the student of human origins the surprisingly complete Peking finds associated with fire and artifacts under fifty meters of cave deposit seem

the answer to an archaeologist's prayer. Physically, stratigraphically, and geologically they illuminate the dawn period of human progress in an utterly satisfactory manner. Père Teilhard stated that Sinanthropus appeared in China at the time of violent continental uplift and sharp faunal change. The subtropical Pliocene fauna was replaced by other forms from the northwest and by the water buffalo from the south. Sinanthropus, the first recorded hominid in northeastern Asia, is morphologically a step below the Neanderthaloid type. He is close to Pithecanthropus of Java and can be regarded as of the same geological age. Photographs of the excellent and unusual skulls, the enormous extent of the excavations, and the exact stratigraphic methods employed were most impressive.

A paper on the Paleolithic Industries in China, by W. C. Pei, was read by Père Teilhard de Chardin. Four paleolithic industries are known: the Choukoutien Sinanthropus, which began the true industry of China, attributed to the Abbevillean of Europe and, geologically, to the Lower Pleistocene; the Locality Fifteen, later than Sinanthropus and early Middle Pleistocene or the late Lower Paleolithic of Europe; the Ordos, contemporary with part of the Chinese loess and perhaps late Middle Pleistocene; and the Choukoutien Upper Cave industries, corresponding to the European Aurignacian, Solutrean, and Magdalenian. At Nihowan and Locality Thirteen, stone implements apparently older than Sinanthropus have been found. Their geological age, Upper Pliocene, is equivalent to Villafranchian in Europe.

The North Eurasian Forest Cultures in the Mesolithic and Neolithic Phases were discussed by Professor V. Gordon Childe. Professor Childe indicated the manner in which geology and botanical study of peat bogs had furnished data on the environment and chronology of man in northern Europe. The Maglemosean culture was particularly adapted to the great forests of this region around 7000 B.C. This is demonstrated by an abundance of stone, bone, and antler chisels and adzes. Otherwise, Maglemosean culture was very similar to that of the older, Paleolithic, mammoth hunters, and of other Mesolithic groups. An East Ancylus facies of the Maglemosean, marked by more boreal developments, such as the dog sleigh, can also be distinguished. While containing many evidences of derivation from the Upper Paleolithic cultures of France, there is still a possibility that this culture was derived from the mammoth hunters of the south Russian loess plains in late glacial and early post-glacial times. About 5000 B.C. the Littorina transgression produced a more favorable climate and the Ertebolle shell-mound

culture can be regarded as an adaptation of Maglemosean to these new conditions. Uniform pit-comb pottery types occurred from Finland to the borders of the Ukraine. The hunting and fishing economy was eventually transformed by the arrival of the Battle-axe folk, who introduced agriculture and stock-breeding. Through ceramic and other survivals, the makers of the pit-combed pottery and their Maglemosean ancestors can be linked up with the historic Finno-Ugric peoples.

Concerned with much earlier times in India, Dr. Helmut de Terra then discussed records of Early Man in the Siwalik Hills. These foothills of the Himalayas are famed through numerous finds of fossilized man-like apes of the late Tertiary period, and of Stone Age cultures of great antiquity. Dr. de Terra discussed the apparent migration of late Tertiary mammals in India, apparently due to a shifting of the tropical belt from north to south, which may have been a major factor in human evolution so far as India is concerned. Stone cultures in the Soan valley appear to run from Chellean to Mesolithic times and, in conjunction with discovery of a high civilization 5000 years old in the Indus valley, reveal a long sequence of human occupation.

Four somewhat diversified papers completed the afternoon's formal program. The first was by Dr. William K. Gregory and Milo S. Hellman on dentition and the origin of man, which was read by the former. The occurrence of the Dryopithecus molar pattern as basic to man and the apes has been questioned. In the light of new anthropoid material from the Siwalik Hills, the authors believe that, despite wide variations in proportions, it is basically constant in both. The molars of *Australopithecus africanus* are closest to the human modification of the pattern, while those of the Ehringsdorf child and of Sinanthropus are least modified from the original Dryopithecus pattern. Contrary to certain others, they feel that the dentition of the older fossil anthropoids was at least structurally ancestral to both Neanderthal and modern man.

Dr. Daniel S. Davidson discussed the "Antiquity of Man in the Pacific and the Question of Trans-Pacific Migrations." Despite the hiatus, so far as fossil remains are concerned, between Pithecanthropus and the occupation of Polynesia only 2000 years ago, it is nevertheless possible to determine the sequence of migration through the present distribution of races. It thus appears that Tasmanians, Australians, Papuans, Melanesians, Indonesians and Malays have migrated from Asia in the order named. As for trans-Pacific migrations in pre-

Polynesian times, such theories are unsupported by any available evidence and are contrary to the facts as known at present.

Dr. Elmer D. Merrill reviewed numerous theories of assumed pre-Columbian Eurasian-American contacts and showed the flimsy evidence on which they are based. Conclusive biological evidence for the autochthonous origin of New World culture is contained in the fact that all cultivated American plants and domesticated animals were of indigenous species.

The final paper, by Dr. Earnest A. Hooton, was both stimulating and amusing. Its formal title was "biology and Fossil Man," but its primary concern seemed to be the human factor in physical anthropology. He pointed out the influence of theological, national and popular attitudes on the treatment and classification of human fossils. Particularly noticeable has been the tendency of discoverers to exaggerate the uniqueness and importance of their own finds and to invest their own beliefs with an aura of complete finality. Dr. Hooton emphasized the many biological pitfalls awaiting the unwary, who seek to classify and interpret the fragmentary remains of early man.

Two round tables, one on Asiatic Chronology, presided over by Père Teilhard de Chardin, and another on the typology and distribution of Folsom and Yuma points, presided over by Mr. Neil Judd, completed the day's activities.

A very full day on Saturday completed the Symposium. Dr. Robert Broom reported on his recent finding of Australopithecus, a chimpanzee-like ape from the caves at Sterfontein in the Transvaal. This skull is closely allied to the Taung skull discovered by Professor Raymond Dart. Its age is uncertain but it appears to date from the Middle Paleolithic of Africa. Dr. Kaj Birket-Smith read a paper on the "Eskimo Cultures and their Bearing on the Prehistoric Cultures of Man in America." Despite the fact that the advanced Bering Sea culture is the oldest Eskimo archaeological horizon yet known, ethnological considerations suggest that the inland culture of the Caribou Eskimo is more primitive in type. Birket-Smith regards this type of Eskimo culture as the most primitive in the whole circumpolar region. The occurrence of similar elements in sequestered areas of North America and northern Eurasia may be interpreted as survivals from an old, widespread, common culture. If we seek Paleolithic connections for the Eskimo, this would appear our most promising lead.

The last paper, by Professor Oswald Menghin of Vienna, was entitled "Autochthonous and Migratorial Trends in the Evolution of Paleolithic Tools." Professor Menghin stated that bone implements appeared in the oldest of three great streams of culture developed early in the Paleolithic. The bone industries had their home in northern Asia. Later developed the flake culture in which the stone core was abandoned. This flake culture probably had its origin in the steppe region of Eurasia. Then appeared the core or hand axe culture, a technique probably first developed in India. Such, at least, seem to be the centers where these cultures appear in isolated forms. In other parts of the world, and in later times, these various techniques existed side by side.

Prior to Dr. MacCurdy's closing address summarizing the results of the Symposium, Dr. Clark Wissler proposed a motion thanking the Academy of Natural Sciences, Mr. Edgar B. Howard and the committee in charge of the program, and Mr. Charles M. B. Cadwalader for the gracious hospitality they had extended. The motion was passed unanimously. So ended the Symposium save for various round tables that needed more time to conclude their discussions. The foregoing account undoubtedly omits many significant points, but these will be covered in the published report on the proceedings. A major event in the history of natural science was over, but its stimulating effects will long endure.

CORRESPONDENCE

Rock Carvings in Southern Illinois

There are a great many different forms of remains left by the prehistoric inhabitants in southern Illinois. These include village sites, rock shelters, mounds, burial grounds, camp sites, flint quarries, and other interesting features. Among the most interesting of these are the rock carvings. These have been mentioned in an article written by Mr. Moyer, of Mounds City. In his article he devotes some time to the possibility of carvings of human tracks being natural. Aside from his article, the reports of rock carvings are very limited. The Piasa Bird near Alton and the Buffalo near Simpson have received some mention also.

In this article it is proposed to deal with some of the more wide-spread types of design encountered in the rock carvings. The conventionalized forms start with common human tracks, and include various other designs such as the turkey tracks, concentric circles, encircled crosses, and other less common forms.

Fig. 12

Petroglyphs occur throughout southern Illinois and along the streams which border this area. The carved human footprints occur abundantly here, through Indiana and Ohio, and along the Tennessee and Cumberland rivers. They are also found up the Mississippi and Missouri rivers. Some of the comments on these carvings of human tracks are quite interesting. In one vicinity the most widely accepted report, prevailing for nearly a century, is that they are angel footprints that have been pressed into the sandstone. Another, that they are actual tracks, has been mentioned.

In general these carvings occur on flat sandstone outcroppings but may also occur on the walls of rock shelters. The designs appear to have been pecked and ground into the sandstone to produce a most realistic effect, indicating that the foot or hand was actually used as a model. In a few cases it appears that they were also painted.

One of the most interesting groups of carvings is to be found on the farm of W. Sherman Evans, SE¼, Sec. 35, R 3 E, T 13 S, several miles east of Vienna. Here a flat rock occurs near the top of a point overlooking a bend in a small stream. Surrounding this point are bluffs more or less steep and descending some fifty to one hundred feet. The rock on which the carvings occur is about

twenty by thirty feet in dimensions, but its sides have been covered by soil so that some of the carvings are not to be seen at the present time. Here nearly forty different carvings of human footprints occur. Many of these are in pairs so placed as to represent individuals standing still. The local inhabitants interpret these tracks (Figure 12) as indicative of a wedding ceremony, because of the positions of the important tracks. In addition to these, there are several "turkey" tracks, two circles each enclosing a cross, one eye-like carving, and, at one edge, a carved depression like a cultivator seat, as if some large person had sat there. Another carving, somewhat indistinct, gives one the impression of a man carrying a spear and dancing.

Another so-called "track rock" is on the shore of the stream on the Russell farm, about 6 miles west and north of Vergennes. Here a flat piece of sandstone which forms part of the bed of the stream has been carved to represent foot prints of varying sizes, from that of a child six years old to that of a large adult. All but one of these are of the right foot. Another peculiar feature is that the largest track, and one resembling in size that of a child eight years old, have the big toe turned at a right-angle to the rest of the foot. Here, too, is a carving of the imprints as they would be left by the hand and arm of a child who had bent over to get a drink at a small pool; and here, as at the Evans farm, is a seat-like carving as if one had sat there.

While there seems to be no village site in the immediate vicinity of the Evans place, there is an extensive site about a quarter of a mile away, on the Russell place.

About six miles west and a mile north of Murphysboro is an interesting village and rock shelter. Here, due to the two distinct hard layers of rock, shelters or caves have been formed at two different levels against a cliff which is nearly 120 feet high. At one place a ripple-marked sandstone slab had fallen down and broken. On this are found carved hand and foot impressions, one of the latter having the big toe turned out at almost a right-angle. Here, too, were some circles enclosing crosses, concentric circles almost of the eye type, an animal face, probably a bear, a small animal with a large tail, and, finally, a Thunder Bird, which will be considered again later.

Along the walls of a rock shelter about half way up the west side of Fountain Bluff and overlooking the Mississippi is a very interesting and extensive series of carvings (Figure 13). Most of these are on the vertical wall of a rock shelter and include the usual items of footprints, hand prints, a seat, concentric circles, eye or turtle designs, a sort of dagger or, probably, a dragon fly or tadpole, and finally, a series of lines one inch wide connecting small cavities, each about three inches in diameter. This last design might be a map of the nearby area and indicate streams and village sites, particularly if the Mississippi River were assumed to occupy its former channel, to the north and east. In this shelter the carvings extend over an area nearly fifty feet long. About a mile northeast of this place, on Leo Rock, appear a number of carvings largely in the form of curved lines, perhaps representing snakes. At the extreme north of Fountain

Bluff on the highest point overlooking the Mississippi River are footprints placed as though a man had stood there looking up stream. About a quarter of a mile east of this point, overlooking the railroad, a natural formation of rock high up on the side of the cliff has been carved sufficiently to represent a large snake apparently coming out of the rock.

In Austin Hollow, near a road which has been recently improved by CCC workers from Camp Glen, there is a large boulder which formerly had many of these common designs carved on it. This rock is widely known as Track Rock or Turkey Track Rock. It is about eighteen feet by twelve feet by four feet, is situated near a spring, and is overlooked by a bluff on which are a large number of stone burial slabs. Most of the designs unfortunately have been cut off or defaced by initials.

FIG. 13

The questions which arise concerning rock carvings are usually "Who made them?", "When were they made?", and "For what purpose?" There is too little information available to draw any conclusions as to the purpose of these carvings, but when one considers the labor involved in making them, he must conclude that they have some quite definite purpose. The various positions of the tracks made possibly may have served to commemorate some event of local importance, such as the wedding mentioned in connection with the Evans glyphs. Some have suggested that they were connected with the puberty rites associated with the initiation ceremony of the boys, but the very nature of the footprints is in opposition to such an interpretation. Another suggestion, that they were made by look-outs seems quite plausible in a few instances but almost impossible in others; for example, on the Fountain Bluffs a group of watchmen might have put in their time making these carvings, but in the valley, as on the Russell farm or at Austin Hollow, there would be no point to this suggestion.

As to the date when these carvings were made, it is quite safe to assume that they were not made by the Illinois or other Algonkian Indians, who came into this area after 1650. From the distribution of this type of carving it is known that the makers at some time extended throughout the Ohio, Cumberland, and Tennessee river valleys, in the adjacent regions beyond the Mississippi. Since

it has been well pointed out by such men as Swanton, Myer, Dixon, and Spinden that Siouan tribes migrated through this area and seem to have been finally driven west of the Mississippi shortly before the advent of the whites, it seems quite possible that members of this tribe made the carvings.

This is further brought out by a study of other designs. One of the most interesting is the "Thunder Bird," at Peter's Cave. It resembles very much the copper carvings found in this area, near Alton, and in southeast Missouri. One carving at the Evans place resembles very much the copper carving of dancing men from Union County, which in turn is quite similar to those from Mound City and the Etowah Mounds. It would thus seem that these rock carvings were made during some late prehistoric period by Indians of the Siouan stock.

In closing, the writer feels that at this time, when the government is doing so much in the way of conservation, the major groups of rock carvings should be taken over and preserved by the state or national governments, partly for their historic value, but most especially because of their appeal to tourists and others.

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Anonymous Reviews

Mr. McKern in his editorial in Vol. II, No. 4 of this journal has clearly and forcefully presented the requirements of the critical review. His comments are especially timely because with growing specialization in anthropology the student is less able to judge the value of work outside his own limited field and consequently becomes increasingly dependent upon the critical discussion of the qualified reviewer. Also, with the rapid accumulation of anthropological material, there must be a commensurate elevation of standards; the unprejudiced, searching criticism of all data, which we associate with scientific investigation, must become habitual. How, therefore, can reviewers be encouraged to give the critical, impersonal evaluation advocated by McKern? Is it sufficient for us to know what is desirable? Probably many reviews published at the present time fail to meet McKern's standards. Both the over-courteous treatment and sarcastic references are too familiar to us. We cannot attribute this fact to ignorance on the part of reviewers as to what constitutes a creditable review. Human sensitiveness is doubtless a factor which influences in some measure the character and quality of many reviews. Can the common human tendency to resent criticism and the resultant fear of offending be corrected by reason? We would like to think that all anthropologists maintain an impersonal attitude toward their work, and that they welcome criticism as a valuable aid. But if we have not yet attained this level, must we not admit it and reckon with the facts? The need for an editorial such as McKern's may be regarded as an answer to the question.

Granted, therefore, that the personal element exists and should be eliminated, can we rely on the independent, scrupulously honest individuals among us to set the standard so that in due course of time direct critical reviews come to be accepted without question, or can the same end be attained more simply and quickly by other means? What would be the effect upon the quality of reviews of publishing them anonymously?

Such a recourse is perhaps a concession to human weakness, and as such, will arouse protest. Anonymous reviews seem cowardly; but so also are many signed reviews, and doubtless they will continue to be. The reviewer intentionally avoids criticism or, as McKern points out, he masks it in "pseudo-complimentary verbiage," and so out of fear of offending or of arousing personal enmity fails to give a true evaluation. With an anonymous review, on the other hand, the personal element is automatically removed; the reviewer need consider only the merit of the work, for he is under no constraint to soften hard facts or to counterbalance necessary criticisms by praise of some inconsequential aspect of the work.

One objection to the anonymous review might be that it would permit the person with prejudice or malice to give free expression to his feelings; but any review which is evidently biased by personal feeling should be rejected by the editor. Specific criticism with citations and courteous impersonal treatment, as defined by McKern, should be demanded in any event.

Ideally, interest in the subject matter of a book, and this alone, should dictate the writing of a review. The anonymous review would free the reviewer from any thought of personal reaction, and it might also have another advantage which is worth considering. It would prevent the misuse of the review for personal gratification. The signed review may give the reviewer a certain satisfaction, particularly in the authoritative expression of a counter-opinion. It would be well if this abuse of the review could be corrected.

The name of the reviewer is not essential to the reader. He wishes only to know that the reviewer is qualified to pass upon the work being reviewed. This fact is shown by the character of the review more directly than by the reputation of the reviewer. In any event, the editor assumes responsibility in the assignment and acceptance of reviews, and the name would be withheld only in publication.

I raise the question of anonymous reviews merely from interest in the possible effect upon quality of review. Probably no one can predict with certainty the result of such a policy, but the question could be answered by trial. Is it worth while for a journal to adopt the policy of publishing reviews anonymously for a limited period as an experiment and, during that period, compare the standard of reviews so published with signed ones of previous issues?

ANNA O. SHEPARD
Boulder, Colorado

POT-HUNTING: A STATEMENT OF POLICY[133]

The man who digs up archeological specimens in order to sell them is known commonly as a pot-hunter. The problem of pot-hunting has existed since archeology began, but it has grown much more acute during the recent years of economic depression, when profitable employment has been hard to find. Today it is a serious menace to the future of the science of archeology, with hundreds of the most promising archeological sites throughout the country being robbed of their scientific value by men who dig for the money it will bring them.

Laws and federal departmental regulations exist for the protection of antiquities on public lands, but they have as little effect as had the recent law of prohibition, despite the severe penalties provided. They cannot be applied to private lands, although the destruction of archeological evidence on private land is no less a blow to the science than if the land were under federal jurisdiction.

The only way to stop the pot-hunter is to deprive him of his market. That market consists principally in museums and in other institutions of learning and research. There is compartively little private buying of archeological loot.

Southwest Museum hereby gives notice that it will not buy any archeological specimens except under the following conditions:

1. Objects brought to light in non-archeological excavation, as road cuts, excavation for buildings, etc.,or by such uncontrollable natural forces as erosion, wave action, etc.

2. Collections known to have been scientifically gathered. (The expression "scientifically gathered" signifies that the material has been collected by one trained in archeology, that accurate field notes have been kept and photographs made, and a report on the work prepared.)

3. Collections known not to have been gathered contrary to law.

Southwest Museum invites all institutions and societies which have in interest in archeology or any related science to take a public stand against the growing menace of pot-hunting. A word from you will be appreciated.

F. W. HODGE, *Director*
Southwest Museum
Los Angeles, California

A RECONNAISSANCE

The Manzana State Game Refuge in the heart of the Santa Barbara National Forest lies thirty miles northwest of the city of Santa Barbara, California. It is approximately twenty miles in length and eight and one-half in width. The Sisquoc River forms the northern and eastern boundaries, and an affluent, the Manzana River, forms the southwestern boundary. Within these

[133] Reprinted from *The Masterkey* for July, 1937.

borders rests a practically unknown region of deep gorges, steep declivities, and masses of exposed and eroded sandstone. Until the year 1935, no road existed in this territory, and trails suitable for pack trains were negligible.

For years past rumors have from time to time been circulated regarding seeming evidences that a group of prehistoric people, at least fairly advanced in culture, had once been established in this isolated spot. The most enticing of these rumors spoke guardedly of a painted cave that equalled or surpassed everything of the kind heretofore known in this vicinity.

During the spring of 1935, the Anthropological Department of the Santa Barbara Museum of Natural History undertook a preliminary survey of this tract, the objective being to determine what relationships, if any, the early men of this region bore to those of the adjoining coast. A well organized expedition was sent into the field late in April and, during the months of May and June, made a fairly comprehensive reconnaissance of the central portion of the southern slope of Bald Ridge, which is a northern extension of the Hurricane Deck where a limited archaeological investigation had been made by a representative of the Smithsonian Institution in 1934.

It was found that throughout the entire length of the line of rock masses there are to be found small caves, grottoes, and rock shelters in considerable number. In the majority of instances these were found to have been utilized in some capacity by the early inhabitants, for the most part as residences, but in instances for the caching of supplies. Still other shelters appear to have had a sacred significance, their walls being decorated with paintings and incised designs. In all, about forty such shelters were found.

A survey was made of the region and all sites were carefully mapped and comprehensive photographic records taken; over three hundred of these are now on file. A considerable collection of material was taken from the caves, basketry in variety and wooden artifacts being in the majority. In the latter class are included several large wooden tubes or cylinders, the original use of which must for the present remain conjectural.

During the exploration a trial trench was dug through a hitherto undisturbed cemetery. This operation yielded several skeletons, each buried in the typical Canaliño embryonic posture, and these were accompanied by large, well fashioned, conical sandstone bowls, and smaller vessels of serpentine. One large, globular vessel of gray, crystalline steatite was also present, all very reminiscent of the remains of the coastal dwellers. Perhaps the most significant of the finds in this cemetery was a single small glass bead of an early type, the only evidence we discovered that would indicate that this people tarried in the region until the arrival of the whites in America.

Nothing was found to indicate that the two earlier peoples who are known to have occupied the coastal region near Santa Barbara were present in this back country. That a people very similar to the Canaliño in their cultural aspects were established here, seems futile to deny. That they led a happy, carefree life is easily read from the exuberance of the brightly painted, outlandish figures with

which they decorated the walls of rock shelters, these often taking the form of enormous, grotesque insects and reptiles, impossible to describe. Another development of their art is to be seen in many incisions on the flat surface of the rock. In the majority of such instances these take the form of huge bear tracks.

Another fact that seems to be irrefutable is that this people entirely disappeared from the region under discussion a short time after the first arrival of the white man on the coast.

The sites and material for study in this region appear to be practically limitless, and the paintings that are lavished upon the walls of the numerous grottoes are well worthy of a detailed study. The Santa Barbara Museum of Natural History is planning to devote more careful study to these during the early summer of 1937, when the trails now being constructed will offer more convenience than heretofore available to the student who enters the waterless, chaparral-covered wilderness.

David Banks Rogers
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Santa Barbara Museum of Natural History
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A Cache of Chert Blades in Saginaw County, Michigan

On December 27, 1936, while looking over ground in the northwest quarter of Section 31, James Township, Saginaw County, I noticed two large leaf-shaped blades of the characteristic Bay Port chert lying close together on the fresh-plowed land. Their unusual size and rough flaking attracted my attention, for they were over eight inches in length and proportionately wide. At once I suspected a possible cache. As the ground was frozen, no exploration was attempted, but bearings were taken and measurements made in order to locate the spot for future examination. The exact spot, on land owned by Mr. Charles Watson, was 272 feet westerly from the northwest corner of his residence.

On April 14, 1937, in company with a friend, I visited the place and, with a slender steel rod, probed the loose sand over a space about four feet by ten feet, working in both directions from the spot where the two blades, and four scattered blades smaller in size,were found. Finally the rod met with a definite obstruction which gave out a tinkling sound. A few minutes' digging exposed a cache of forty-two blades piled together, filling a space about sixteen inches in diameter and eight inches thick, the top of the cache being about seven inches below the present surface. The height of the low knoll in which it was found, has been reduced perhaps a foot in the last few years by winds, for the soil is a rather light sand. The cache was in the otherwise undisturbed yellow core sand, entirely below the worked soil; but in passing over the spot, the plow had touched and moved some of the top pieces, thus giving the clue to the presence of the cache.

Some of the smaller pieces were unchipped flakes, but nearly all were

roughly worked, including all the large ones. The smallest was two and one-half inches long; the largest, nine and three-quarters by three and three-quarters inches, and proportionately thick. Fifteen large blades were for the most part laid systematically in the bottom, and the small ones dumped in on top. Four large pieces were laid over like a cover.

The length of these larger artifacts indicated a very large nodule or nodules, in fact of very unusual size, for it is seldom they are found as much as eight inches in diameter, while those from which these flakes were struck could not have less than ten, and probably eleven or twelve inches in diameter. It would seem that they had been brought from a distance in their present form, as they are unfinished; that is, not reduced to specialized forms. The Indians commonly collected the nodules at the localities where they occurred, and conveyed them to their villages and camps, there working them up at their leisure. In this case it seems probable that, owing to the great weight of the individual nodules, it was more convenient to prepare the rough blades, the largest of which weighs two pounds ten ounces. The total weight of the cache is thirty-four and one-half pounds.

Mr. Watson, owner of the land, says that he has plowed up two lots of small flakes or blades, but paid little attention to them as they were not worked to any specialized form so far as he observed. Mr. Watson's farmhouse is about twenty-five or thirty rods from the Tittabawassee River, in the vicinity of which, for a distance to four miles up and down its course, there have been at least eight caches found, ranging from beautiful complex forms in fine material to rough blades.

RALPH W. STROEBEL
Saginaw W. S., Michigan

NOTES AND NEWS

Arctic Area

Dr. Froelich G. Rainey, of the University of Alaska, plans to carry on explorations this summer both in the interior of Alaska and in the Bering Sea area. He will excavate at two sites in the interior until about the middle of July. Two months will then be devoted to work on St. Lawrence Island, the principal objective being the excavation of the lower and older deposits at Kukuliak. This is the large and important Eskimo midden on the north shore of St. Lawrence Island where Mr. Otto Wm. Geist has carried on excavations for the University of Alaska over a period of six seasons, beginning in 1929.

A report, entitled *Archeological Excavations at Kukuliak, St. Lawrence Island, Alaska*, covering principally the excavations of 1934 and 1935, written by Mr. Geist and Dr. Rainey, was issued in April of this year.

Dr. Rainey also sends in the following note regarding the finding of a stone artifact in apparent association with mastodon remains:

"The objects were found by Peter Maas, an employe of the Fairbanks Exploration Company at Ester Creek, during the past summer. They were reported to me in March. Maas states that he found the spearhead imbedded in the large part of a small mastodon skull which was frozen in the ice, left after 65 feet of muck had been removed. He saw the blade sticking out, pulled it loose, and then saw that it had been sticking in a bone. The bone was chopped out and was found to be the upper fragment of the right maxillary bone. A good part of the skull was present, but was badly preserved and discarded. He gave me only a fragment of the maxillary with the spearhead. Curiously enough, this spearhead resembles one of the Yuma types, as you will observe in the photograph which is natural size. This is the third point or blade found last summer; one at Ester, one at Cripple, and one at Goldstream. I do not doubt Maas' word at all, and feel that it is an authentic find." (*H.B.C*)

Pacific Coast Area

The San Diego Museum, which serves as the official repository for archeologic materials from the local state park areas, has recently completed a two-year project in the Cuyamaca State Park. During this period the most valuable evidence obtained was with regard to cremation practices. The excavation of four cremation cemeteries within the park area and two just outside were of prime importance because of their location. Heretofore, it had been found that the use of the cinerary-urn among the Yuman stock was confined entirely to the Northern Diegueño, but one of the recently excavated cemeteries, which was definitely located inside the boundaries of the Southern Diegueño, produced three cinerary-urns, indicating that the usage had begun to diffuse

during the 19th century. One new type of cremation practice was also established among the Northern Diegueño, namely, secondary disposition wherein the cremations had been consummated in one area and the urns containing the ashes segregated in a different area.

Curator Malcolm J. Rogers has completed a report on the pre-pottery, lithic industries of the lower Colorado River region and adjacent desert areas, which will be published in the fall by the museum. In this paper, which summarizes seventeen years investigations over a very large area, are presented interesting evidences of early man in the field concerned.

Mr. George F. Carter, Assistant Curator, has in preparation a report dealing with the structural history of a large shell-midden located on Point Sal in California. As the site produced three different types of interments, one of which was quite unusual for the area, a broader understanding of the methods employed in disposing of the dead among the California aborigines has been obtained. (*E.W.G.*)

The Southwest Museum has just published a report (118 pages) on *The Archeology of Pleistocene Lake Mohave* which is an important contribution to the study of early man in America. The volume is a symposium, comprising articles by Elizabeth W. Crozer Campbell, William H. Campbell and Charles Avery Amsden of the Southwest Museum; Ernest Antevs of Carnegie Institution of Washington; Francis D. Bode of the California Institute of Technology; and Joseph A. Barbieri.

Mr. Edwin F. Walker, Research Associate, has completed his excavations at the Palos Verdes village site near Redondo, California. An interesting succession of cultures was found in which four stages or periods can be distinguished.

Mr. Charles Avery Amsden, Secretary, after ten years' continuous service with the Southwest Museum, is taking a six-month leave of absence, beginning July 15th.

Most of the exhibits in the Sooouthwest Museum have been revised or entirely changed to take advantage of the excellent new material received during the past few years, mainly through gift.

The Walter McClintock Collection from the Blackfoot has been installed in the new Plains Indians hall where it forms a valuable addition to the displays.

An extensive selection from the Caroline Boeing Poole Collection of American Indian baskets has just been placed on exhibition. This is one of the largest and finest collections of its kind in the world, comprising 2375 individual specimens.

It is planned to continue the Southwest Museum's research in Nevada on the problem of early man, as well as the Basket Maker and Pueblo manifestations in that state, as soon as funds are available. (*E.W.G.*)

Southwestern Area

The Field Museum will excavate a number of small ruins near and around the Lowry Ruin, which was excavated several seasons ago. The ruins are located in the Southwest corner of Colorado, west of Mesa Verde National Park. The staff will consist of Dr. Paul Martin, head of the Department of Anthropology at the Field Museum, as director; Carl Lloyd, photographer; and Alexander Spoehr of the University of Chicago, surveyor. Work will be conducted from the middle of June to the middle of September. (*T.D.*)

A survey to locate prehistoric ruins in the Grand Canyon National Park is being conducted during the summer months. Under the direction of the naturalist Department of the National Park Service, Mr. E. T. Hall, Jr., graduate student in archaeology from the University of Arizona and the University of Denver, is carrying on work along both the north and south rims of the canyon. Ruins are marked, recorded on a topographic map and in a card file, and sherd collections are made and catalogued. The data from this survey will be on file, with information from previous surveys, at the office of the Park Naturalist, Grand Canyon National Park. Certain features already brought out by the survey suggest some results of unusual interest. These will be reported at a later date. (*E.W.H.*)

In line with a new retirement plan now in operation at the University of Arizona, Dr. Byron Cummings has been retired as Head of the Department of Anthropology. Dr. Cummings retains the directorship of the Arizona State Museum, which he has held, along with his position as Head of the Department of Anthropology, for the past twenty-two years.

Dr. Emil W. Haury has been appointed Head of the Department of Anthropology in the capacity of Associate Professor. (*E.W.H.*)

Great Plains Area

Mr. H. Melville Sayre reports the progress of excavations in three rock shelters in the Eagle Sandstone, Yellowstone County, Montana. These caves have long been known for their Indian pictographs, done in red and brown.

About April 15, Mr. and Mrs. Jim Browne and Mr. Herbert Barringer discovered that underneath the present floor of one cave there are two stratified levels representing old cave floors. Mr. Sayre first visited the site April 18, returning a month later with three assistants for preliminary work necessary before the arrival of WPA labor. Since that time someone has been camped at the site all the time so that curio seekers have had no chance to disturb the deposits. The cave in which work will be carried on this year is known as Inscription Cave. It is a typical rock shelter 190 feet long, 35 feet deep in the lower cave, and 60 feet deep in the upper cave. The slab rock which has fallen

from the roof to cover the floor of the upper cave has been cut away by the stream which in wet weather pours over the cliff. This erosion has laid bare two levels of human occupation. Hundreds of tons of slab rock in the upper cave must be removed before the extent of these levels can be determined.

A cross section would show the following members: (1) From present surface down to Level 3—four to five feet. Brown, dry, finely lenticular, stratified, fine sand and small lenses of fine gravel (Angular pebbles less than ¼ inch); slab rock fallen from the roof interspersed with the sand. This sand looks as if it had been windblown, although it is barely possible that some water action accompanied the accumulation. It is uniform and homogeneous wherever exposed. (2) Level 3—two to six inches; charcoal, bone and burned bone, chipped flint, flint implements, bone implements, chokecherry seeds, and so forth, were exposed. (3) From Level 3 down to Level 2—four to six and one-half feet; a very light buff powdery sand in loose to consolidated strata, strikingly different from the top layer. Part of this looks like a true loess, although microscopic analyses will have to be made to determine this. (4) Level 2—similar materials and thickness to Level 3.

While attempting to strike the bedrock of the original cave, what appears to be a still lower level, which we shall call tentatively Level 1, was encountered. The material in the trench was still wet from recent rains, so that it is difficult to state positively that this is a true level until it is examined after drying. However, at a depth of nine feet six inches below Level 3, several fragments of bone, three teeth which look like those of a young antelope or deer, and some charcoal were discovered, all checking to within an inch of the same depth below Level 3.

There can be no question of the true stratification, as all of this material is exposed in a single section, and everything from the top to Level 2 is exposed in the section within the cave across the washed gulley. Both Level 2 and Level 3 check by hand-level with the similar layers across the gulley.

The excavation is planned from a quarter stake one-fourth of the distance from the east end of the lower cave to the west end of the upper cave. This allows measurements in cubic yards with a control number at each corner of each cube. Everything will be labeled by the inch, according to these controls, as it is removed from the deposits. From the artifacts so far removed it appears that all of the levels are prehistoric, and that they contain no pottery. (*H. M. Sayre.*)

A University of Nebraska party, under the direction of Dr. Earl H. Bell, is reported to be at work in the Niobrara Valley, where at least four distinct cultural manifestations have been identified from previous investigations. These appear to range in point of time from historic Ponca to a relatively old manifestation resembling Woodland. (*E. H. Bell.*)

Northern Mississippi Area

Materials and data collected during the months May–August at a large village site on the shore of Lake Winneconne, Winnebago County, Wisconsin, have contributed seven new detailed pottery traits to the Lake Winnebago Focus, Upper Mississippi Phase. These traits include: miniature pottery ladles; pottery effigy heads; a new technique for producing decorative surface intaglios; lateral lip extensions in sets of four, serving to give the rim a square shape; decoration by means of stripes of thin reddish paint on dark gray outer surfaces; and two new decorative motifs. Specimens include the finest decorated pottery reported for the entire Upper Mississippi Phase.

Two additional traits: mound burial and curiously shaped features of stone constructed on mound floors, have not certainly been established as belonging to the Lake Winnebago Focus.

The work is being conducted by the Oshkosh Public Museum, under the personal direction of Mr. A. P. Kannenberg, Curator of Archaeology, assisted by Mr. R. N. Buckstaff, Curator of Natural History. (*W.C.M.*)

The Department of Anthropology of the University of Chicago is setting up a tree ring project with the objects of dating the Mound Builder remains of the Mississippi drainage and adjoining districts and of making meteorological studies in the same area. The laboratory is to be housed in the studio of the late Lorado Taft. This building is a recent acquisition of the University. The work will be in charge of Dr. Florence Hawley Senter, who will be on leave from the University of New Mexico and on the University of Chicago faculty until June, 1938, after which date she will divide her time between the two institutions. During the summer she and her husband, Mr. Donovan Senter, are collecting specimens of large modern trees and of old timbers from piers, covered bridges, cabins, dams, and barns through Wisconsin, Illinois, Kentucky, Tennessee, Ohio, Indiana, and the eastern edges of Missouri and Iowa. Excellent coöperation is being found throughout the area. It is suggested that archaeologists taking fragile wood from mound sites preserve it by soaking it in a saturated solution of paraffin and gasoline and send word of it or of any material from old historic sites to the Department at Chicago. All such help will be greatly appreciated. (*T.D.*)

At the Rockford meeting of the Illinois Academy of Science, on May 7, Mr. A. M. Simpson of the Peoria Academy of Science was awarded a grant to assist in carrying on a survey of aboriginal sites around Peoria Lake with a view to the identification of the site and cultural complex of the village belonging to the Peorias, a division or tribe of the Illinois Indians. (*T.D.*)

The Anthropological Section of the Illinois Academy of Science held a meeting at Rockford, Illinois, on May 7, at the time of the general Academy

meeting. Visits to mound groups in Winnebago County and to Beloit Museum were arranged by the Chairman, Dr. J. B. Ruyle. The following papers were given:

Culture of the Sand Dune Area of Lake Michigan Region, Warren C. Van Male, Waukegan.

Monolithic Axes, Claude U. Stone, Peoria Academy of Science, Peoria, Illinois.

Burials, Artifacts, and Culture of Southern Kentucky, Kenneth Knight, Illinois State Normal University.

Various Types of Kingston Site Burials, Anton M. Simpson, Peoria Academy of Science.

Stone Artifacts of the North American Indian, C. W. Hudelson, Illinois State Normal University.

Artifacts Typical to Winnebago County, F. L. Barloga, Peoria High School and Peoria Academy of Science.

Ornamental Uses of the Banner Stone, Byron Knoblock, LaGrange, Illinois.

Diseased Conditions Found in Prehistoric Skulls, Dr. L. H. Wolfe, Quincy, Illinois.

The Future of Archaeology in Illinois, Dr. J. B. Ruyle.

The Meaning of Archaeology, Dr. Fay-Cooper Cole, University of Chicago.

The Kincaid Site, Its Relatives and Neighbors, Dr. Thorne Deuel, University of Chicago.

A Round Grave Culture Site in Illinois, Alexander Spoehr, University of Chicago. (*T.D.*)

Southeastern Area

Messrs. Charles Fairbanks and Paul Maynard, graduate students in anthropology at the University of Chicago, have joined the excavating staff of Professor T. M. N. Lewis of the University of Tennessee. At present, they are engaged in investigating sites on the Little Tennessee River near Dayton. (*T.D.*)

The fall meeting of the Oklahoma State Archaeological Society will be held October 23, 1937, both afternoon and evening. This meeting will be held in conjunction with the American Indian Exposition, which is sponsored by the Tulsa Chamber of Commerce.

Dr. Forrest E. Clements, Department of Anthropology of the University of Oklahoma, will lecture on "The Great Spiro Mound," and will show colored films. The American Indian Exposition will have on exhibit the complete findings from Spiro. This exhibit will be transferred to the University of Tulsa after the exhibit, where it will be on display for one year.

Other speakers who will appear on the program include Mr. H. R. Antle, assistant to Dr. F. E. Clements, at Winnewood, and Dr. J. Brewton Berry of the Missouri Archaeological Society. (*Dorothy F. Morgan.*)

South American Area

In the last issue of this journal, Vol. III, No. 1, with news items from South America, it was stated that Mr. Donald Collier had received the Mr. and Mrs Robert Woods Bliss Fellowship. This should have read: "Mr. Donald Collier, of the University of Chicago, has received the Dumbarton Oaks Fellowship from the Institute of Andean Research."

The error was entirely due to an editorial blunder and your editor offers sincere apologies to Mr. Collier, Mr. and Mrs. Bliss, and Dr. Wendell Bennett through whose kindness the news item was submitted. (*W.C.M.*)

It should be added that Miss Isabel Guernsey, of the Peabody Museum, was awarded the other of the two annual fellowships (paying $1500 each) of the Institute for the year 1937–38. The purpose of the Institute is to sponsor and coördinate research in the Andean region in archaeology, ethnology, linguistics, physical anthropology, and allied fields. Miss Guernsey will make a study of mummy wrappings and other textiles recovered in Peru. Mr. Collier will assist Dr. Julio Tello on survey and excavation projects. (*T.D.*)

Announcement

The American Ethnological Society announces the establishment of a new series, Monographs of the American Ethnological Society, to be issued annually, beginning in 1938. The object of the society in establishing this series is to furnish a new medium for the publication of longer studies. The undersigned Board of Editors will select the study to be published in 1938 from manuscripts submitted on or before February 1, 1938.

Manuscripts should not exceed 75,000 words (about 175–200 pages of print); must be in the field of ethnology; and should be in condition for printing. They should be addressed to

Secretary
American Ethnological Society
c/o Dept. of Anthropology
Columbia University
New York City.

Manuscripts not accepted for publication will be returned to the authors after the selection has been made.

Clark Wissler, *Chairman*
A. I. Hallowell
Alexander Lesser

BOOK REVIEWS

Ceramic Relationships of the Pre-Caddo Pottery from the Crenshaw Site. S. D. DICKINSON. (Texas Archaeological and Paleontological Society Bulletin, Vol. 8, pp. 56–68, 3 plates, September, 1936.)

A ceramic complex demonstrably older than the Caddoan in southwestern Arkansas is described and compared in this very interesting paper. The material treated was discovered at the Crenshaw site on Red River in Miller County, Arkansas, by Mr. Harry J. Lemley, who reports on his work in the preceding paper in this same bulletin (*Discoveries Indicating a Pre-Caddo Culture on the Red River in Arkansas*, pp. 25–55). Six mounds comprised the site, which had previously been visited and described by C. B. Moore. In two of the mounds, designated "B" and "D," Lemley found "Pre-Caddo" burials and accompanying furniture deposited in shallow pits dug before the erection of the structures. Typical Caddo burials were found in pits which had been intruded into the mounds after their completion.

Differences between "Pre-Caddo" pottery and the Caddoan ware generally described from southwestern Arkansas are quite marked. Dickinson points out that the older material at the Crenshaw site is characterized by bowl, plate, round and square beaker, and asymmetrical forms. Bottle forms, so common in the Caddo, are entirely lacking. Bottoms are convex or flat with the latter form either round or square in shape. Both flat and rounded rims are found, sometimes thickened, and often with a line in the flattened lip. Drilled holes on opposite sides of the vessel are often found just under the rim. Decorations consist of: lines, sometimes overhanging, drawn parallel to the rim; negative line-bordered bands forming scroll and undulating (meander) figures with large triangular punctates used at the ends of lines and small ones to stipple the background; a few cases of punctates in lines; and occasional red slips. The ware is tan, brown, black, or dark grey in color with a predominance of grit tempering. Shell tempering appears to be lacking. Some of the pieces have a good polish.

Dickinson appears to be well justified in pointing to the close similarities between this material and the Coles Creek complex of the Lower Mississippi Valley. Practically all the vessels illustrated can be paralleled by sherds from Louisiana or Mississippi sites of that complex. The principal difference lies in the numerical dominance at the Crenshaw site of the curvilinear decorations. On Coles Creek village sites the lines drawn parallel to the rim are in the majority. However, in comparing midden with burial collections this is hardly a valid objection. Several Coles Creek type sherds missing from the burial ware are exemplified by sherds which I have seen in Lemley's collection from the Crenshaw site.

Just as close are the similarities, which Dickinson has cited, between the Crenshaw ware and that which has been found on the northwest coast of

Florida. Excepting certain differences in paste and the absence of the feature of "killed" vessels, this collection would hardly have elicited surprise had it been obtained from a Florida sit

It seems unfortunate that Dickinson did not extend his paper to include a description of the Caddoan material found superimposed over these "Pre-Caddo" burials. He has neglected a very interesting possibility that is suggested by the similarities between certain of the "Pre-Caddo" decorations and the decoration that is thought of as most typical of the Caddoan complex in the Red River valley: the complicated negative meander formed by scratched lines with decorated background. The decorations of these complexes share in common the features of the meander formed by a line-bordered smooth band which is brought out by markings in the background. Both sometimes have a single incised line centered in the undecorated band. The punctates in lines illustrated in some of the Crenshaw site vessels may have some genetic relationship to the Caddoan feature of spurred lines. The "Pre-Caddo" decorations of lines drawn parallel to the rim also have certain resemblances in the Caddoan complex.

This report forms a valuable step in the evolution of an archaeological chronology for the Lower Mississippi Valley. It also extends the previously known range of the Coles Creek pottery complex and provides the first treatment of material from a burial site representing this peculiar and interesting period.

J. A. FORD

The Ricketts Site, in Montgomery County, Kentucky. W. D. FUNKHOUSER and W. S. WEBB. (University of Kentucky, Reports in Archaeology and Anthropology, Vol. III, No. 3, pp. 70–100, Lexington, Kentucky, 1935.)

This report is timely in that it is one of the first publications pertaining to archaeological work in the southeastern part of the United States conducted since 1934 with the help of federal relief funds. The Federal Emergency Relief Administration furnished the necessary labor while the University of Kentucky, acting as sponsor, furnished the supplies, equipment, and supervision. As an efficiency measure, since the regulations of the FERA permitted the laborers to work only a limited number of hours per month, the sixty men assigned to the project were split into three groups of twenty, each having two days a week to work. The laborers in this case, as in other similar projects, took a real interest in their work, and the "bonus" paid for worth-while finds served to stimulate their interest with the result that their work, as a whole, was entirely satisfactory.

The mound proper was nearly circular, measuring a hundred feet in its longest and ninety feet in its shortest diameter, and was about twelve feet high. It was composed of surface soil and heavy sandstone boulders. The rocks were not scattered through the mound at random but were found in more or less

definite piles. In some cases burials were found beneath the rock piles, but "certainly all of the graves were not covered with rocks so that the association can not be considered characteristic of the mound." Scattered principally along the floor of the mound were a number of large fire pits. These contained ashes, charcoal, and burned and charred animal bones.

Twelve single burials, two double burials, and two cremations were found, all within the bottom four feet of the mound. The burials were uniform in that they were all extended face up with their arms and legs straight. One of the distinctive features of the mound was the technique of interment, described as follows: "A shallow basin of puddled clay was constructed large enough to contain the body or bodies. In most if not all cases this basin was hardened by fire for all show evidences of burning and many contain ashes and charcoal. The body was then placed in this shallow basin and covered with a layer of puddled clay which again seems to have been hardened by burning . . . The two layers of clay, one under and one over the body, were then pressed together at the edges, like the under and upper crusts of a pie, completely enclosing the body and forming a very strong and substantial grave." In some cases these graves were elevated a foot or more above the floor of the mound on clay platforms.

The mound fill seemed to have been completely void of artifacts or potsherds. The implements and ornaments discovered were found in association with the burials. The artifacts seemed to be typical of the material found in Kentucky with the exception of the two bar-shaped gorgets of the Adena type and several copper bracelets and rings. The authors conclude by saying: "The skeletons are not to be distinguished from the usual so-called Algonquin or Woodland material found commonly throughout the state. The copper artifacts, together with the stone gorgets and the clay graves strongly suggest a northern influence if not actually representing a Hopewell or an Adena culture."

While the publication is excellent in many respects, it suffers from the results of rather poor photography. Some of the photographs are good, but the details in others are obscured by shadows and improper lighting. Aside from the photographs, the only visual description is the master chart of the floor plan of the mound. This shows the horizontal relationships of the burials, fire pits, and rock piles, but the limits of the mound are not shown. No record of the vertical structure was kept since this "was abandoned when it was discovered that the upper part had been so disturbed by previous digging that such records had no significance and particularly when it was found that all of the original burials and important structures were on the basal four-foot level." While the authors may be justified in not keeping a record of the vertical structure, in the opinion of the reviewer such a record with periodic profile drawings, showing the amount of disturbance, would add greatly to the interpretation of the evidence found.

JOFFRE L. COE

A Prehistoric Habitation Site on the St. Croix River. RALPH D. BROWN. (Program of Third Annual Meeting of the Minnesota Academy of Science, University of Minnesota, Minneapolis, Minn., April 13, 1935, and Papers presented at Second Annual Meeting, April 21, 1935 [1934], pp. 4–12.)

In the scanty bibliography of Minnesota archaeology, this paper, presenting the results of excavation during 1933 at the Harvey rock shelter, north of Stillwater, on the west bank of the boundary river, takes an important place. This shelter was the first in the state to be given careful archaeological attention, and this report is so far the only published account of such work in the state. Because of the small number of such habitation sites in Minnesota, this record is of special value. It affords information on the location and character of the shelter, on artifacts and pottery, human skeletal remains, and bone refuse found there, with a brief statement concerning the probable period during which the shelter was occupied.

It is unfortunate that no illustrations were published with the report, but the detailed description of material partially fills this gap. Particularly valuable is the identification of bone refuse; one looks in vain for information of this sort in previous local archaeological papers. The author states that there was no stratification of the deposit, and that cultural material from top to bottom of the deposit did not vary significantly. At least three types of pottery, however, were present; these would seem to be representative wares of the Upper Mississippi and Central Basin phases, the aspects as yet undetermined, although one unique specimen is assigned to the so-called "Hopewell" aspect of the latter phase. Although human bone was present, there were no identifiable burials. Only one item of European origin was obtained, and this immediately beneath the surface: a fragment of a French clay pipe, which it was possible to identify because of the fortunate preservation of the impression of the maker's name.

The importance of the St. Croix River from the standpoint of migration and transportation, in both historic and prehistoric times, as mentioned by the author, is noteworthy. This would suggest that further work on similar sites in the area would yield invaluable data on the stratigraphic problems of the upper Mississippi valley, of which the St. Croix valley is an important branch. The occurrence of a "Hopewell" sherd in this area, for example, is of interest, but further field work will be necessary before important conclusions can be drawn from the find. It is to be hoped that work in this area will be continued, since it seems to offer promise of results important to the study of culture classification problems in an area which has hitherto been quite neglected.

G. HUBERT SMITH

SOME RECENT PUBLICATIONS

UPPER NORTH AMERICA

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